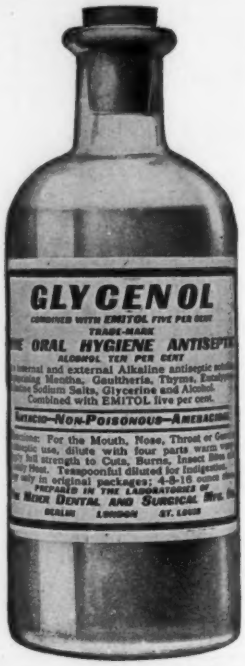

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ORIGINAL COMMUNICATIONS.

The Successful Intranasal Treatment of Affections More or Less Remote from that Organ. Dr. E. MAYER, New York City 81

The Blood-clot Dressing in Closing the Wound in Operations for Simple Mastoid Abscess. Dr. K. K. WHEELOCK, Fort Wayne, Ind. 93

The Ideal Mastoid Operation. Dr. H. O. REIK, Baltimore 99

The Turbinal Origin of "Bleeding Polypus" of the Nose. Dr. TARO MATSUI, Fukuoka, Japan 109

A Bloodless Method of Enucleating Tonsils. Dr. E. T. SMITH, Hartford, Conn. 113

Two Cases of Tic Douloureux of Sphenoidal Inflammatory Etiology. Dr. GREENFIELD SLUDER, St. Louis 122

Secondary Hemorrhage Following Posterior Tip-operation. Description of Sodium Citrate Method of Blood Transfusion. Dr. HAROLD HAYS and Dr. RICHARD LEWISOHN, New York City 124

SELECTED ABSTRACTS.

Nature and Treatment of Bronchial Asthma. R. H. BABCOCK 108

Dentigerous Cyst of Lower Jaw; Operation. WILLIAM MILLIGAN 123

Simpie Method for Extracting Foreign Bodies in the Esophagus. E. FERREYRA 123

Two Cases of Otitic Extradural Abscess. FRASER 127

Early Diagnosis of Gas-Phlegmons by X-ray. LUDWIG FINCKH 137

SOCIETY PROCEEDINGS.

New York Academy of Medicine—Section on Laryngology and Rhinology 128

American Laryngological, Rhinological and Otological Society—Eastern Section 138

Philadelphia Laryngological Society 152

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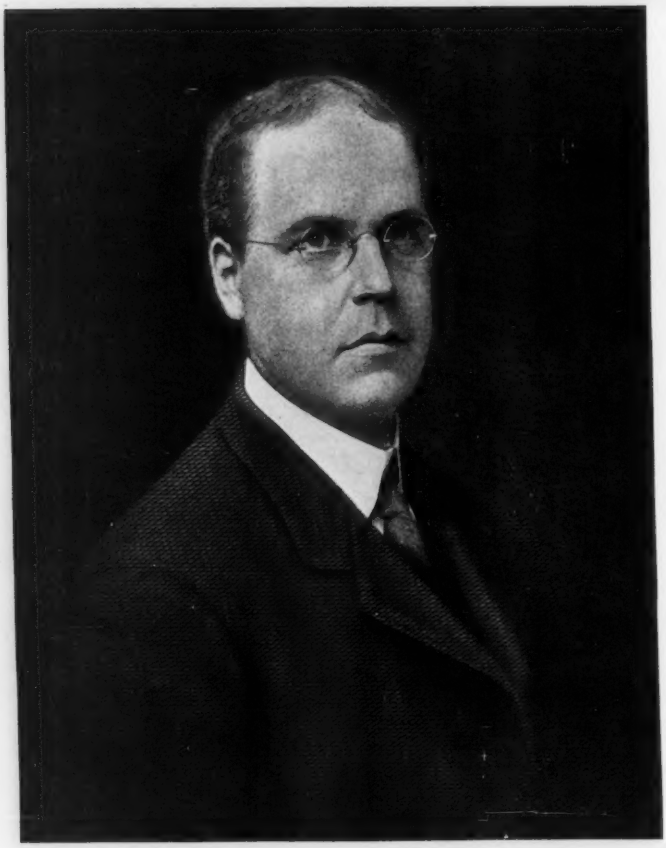

Wm. L. Ballenger, M. D.

IN MEMORIAM

William Lincoln Ballenger, of Chicago, one of our most esteemed co-workers and companions, has passed to the Great Beyond. It seems difficult to believe that his genial face, his kind disposition and stimulating presence will no longer be one of the cherished associations so dear to the hearts of those of his more intimate Fellows and many friends.

Born in a small town in Indiana on April 26, 1861, he received his preliminary education at Earlham College in Richmond, Ind. In 1886 he was graduated from the Bellevue Hospital Medical College and began the practice of medicine in his home town, later continuing general practice in Evanston, Ill. Since 1895, his practice was limited to oto-laryngology.

Dr. Ballenger was Professor of Otology at the Chicago Eye and Ear College and Professor of Otology and Laryngology at the University of Illinois Medical School from 1905 to 1913.

As Secretary of the American Academy of Ophthalmology and Oto-laryngology (1899-1902) and as president of this organization (1902-1903) he was one of the most active factors in the development and stimulation of this society.

He was a member of the Chicago Medical Society, the Illinois State Medical Society, the American Medical Association, the Chicago Laryngological and Otological Society, Vice-President of the American Laryngological, Rhinological and Otological Society in 1905, a Fellow of the American Laryngological Association and a Fellow of the American College of Surgeons.

As a worker in oto-laryngology he was radical in his views and technic and thus served as a splendid stimulant for discussion in many of the important problems that have been developed in our

specialties in the last two decades. He was an experienced and fearless operator, an excellent technician and had the faculty to present his subject-matter clearly and tersely. His text-book on "Diseases of the Ear, Nose and Throat" has been recognized as one of the most important productions in American text-book literature.

Dr. Ballenger's technical ingenuity was responsible for many instrumental innovations, the most universally recognized of which is his swivel knife devised for the removal of cartilage in the submucous resection of the nasal septum.

The intensity with which the present enucleation of the tonsil has been generally driven, received an active impetus through the work and advocacy of this intrepid laryngologist. He had the strength of his convictions and was ever ready to defend his position on the floor or in the medical press.

He was a frequent contributor to medical journals and an ardent supporter of THE LARYNGOSCOPE.

In 1886 he married Miss Ada Poarch, of Richmond, Ind.

We will all miss this strong, able and congenial colleague, taken from us in the most glorious period of his usefulness. And we are thankful that it is our privilege to contribute this slight token of our esteem and appreciation for our departed brother. We extend our condolence to his bereaved family, to his many friends and to the American workers in otology and laryngology.

IN MEMORIAM

Dr. John O. Roe, of Rochester, N. Y., one of the leading laryngologists in this country, died December 24, 1915. He was born in Patchogue, Long Island, on February 3, 1849.

After graduating in medicine from the University of Michigan in 1870, he spent a year in post-graduate study at the College of Physicians and Surgeons in New York, which institution also conferred upon him the degree of Doctor of Medicine in 1871.

Dr. Roe was very active in the development of oto-rhino-laryngology in this country and was especially well known for his work on the plastice surgery of the nose.

He was laryngologist to the Rochester City Hospital.

That he was a scientist of the first order is attested by the numerous scientific bodies in which he was interested. He was a member of the Medical Society of the State of New York, the Central New York Medical Society, the Rochester Academy of Medicine, the Rochester Pathological Society, the American Medical Association, ex-president of the American Laryngological Association, the seventh, eighth and ninth International Medical Congresses at London, Copenhagen and Berlin, respectively, The American Laryngological, Rhinological and Otological Society, the New York Academy of Medicine, the American Climatological Society, the Congress of American Physicians and Surgeons, the British Medical Association and corresponding member of the Societe francaise d'Otologie et de Laryngologie.

Not only these societies mentioned, but the entire medical profession join in mourning the loss of one of their leading members.

THE

LARYNGOSCOPE.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

THE SUCCESSFUL INTRANASAL TREATMENT OF AFFECTIONS MORE OR LESS REMOTE FROM THAT ORGAN.*

DR. EMIL MAYER, New York City.

Perhaps the title of this paper is best amended to read, "The successful treatment of some affections more or less remote from that organ," for it is not my intention to speak of all the bodily ills for which the pathologic conditions of the nose may be held more or less responsible.

For this reason we merely mention a condition seen by all of us of almost daily occurrence, asthma and polypi in the ethmoidal region. Nothing new or unusual may be presented to you on this subject.

Epilepsy of nasal origin has been recorded. Epilepsy is said to have followed the cauterizing of the nose for nasal polypi and following the removal of sarcoma of the nose (Ballenger).

Nasal tachycardia is said to exist and symptoms resembling Grave's disease with goitre and tachycardia are said to have disappeared after curing the existing nasal disease.

HEADACHES.

Headaches are often of nasal origin, but are frequently unrecognized, due to the fact that no nasal symptoms are mentioned by the patient nor felt as such. There is an absence of pus or even catarrhal secretion, so that as a rule the diagnosis is quite accidental. Where all manner of treatment has failed, eye tests show no abnormality, the nose is then suspected and the patient is sent to the rhinologist as a last resort.

*Read before the Philadelphia Laryngological Society, Dec. 7, 1915.

Given the history of a persistent headache, the intranasal examination should be made with great care and very often a condition such as is described in the following case will be found.

A female teacher, aged twenty-one years, had been suffering with persistent frontal headaches for four weeks. During this time every coal-tar derivative and other remedies had been given with no relief. She was utterly incapacitated from attending to her vocation. Her eyes were examined and no unusual conditions found when she was finally referred to me.

The left middle turbinate was found to be enlarged and impinging upon the nasal septum and its removal advised. This was done with the result of complete cessation of her headaches for a period of ten days. There was a return of the headache, which promptly subsided after an application of a 2 per cent solution of carbolic acid to her sphenoidal opening.

Attention has been drawn to this condition at various times. At the meeting of the American Laryngological Association held in June, 1915, at Niagara Falls, Dr. George C. Stout, of Philadelphia, read a paper on headaches due to non-suppurative intranasal conditions, and Dr. Greenfield Sluder read a paper on hyperplastic sphenoiditis and its clinical relations to the second, third, fourth, fifth, sixth and Vidian nerves and nasal ganglion.

Both these papers were freely discussed. Stout called attention to headaches of nasal origin, in which suppurative conditions are positively eliminated by microscopic examination, transillumination, the X-ray, etc. "While these headaches are found in a relatively small per cent of the cases who consult the specialist, they are of sufficiently frequent occurrence, and severe enough in their result upon the nervous and mental condition and general health of the patients, to warrant their being considered as a group by themselves.

"The pain varies from occasional attacks of moderate degree to frequent seizures of intense agony. It is commonly referred to an area back of a triangle formed by the glabella, the outer canthus of the eye, and the anterior nasal spine. It may also affect the teeth, the neighborhood of the eustachian tubes, or ears, sometimes extending down to the shoulder. It is usually unilateral, but may be bilateral, or occur on both sides alternately. It is not increased by the use of the eyes, though sharp, shooting pains through the eyes are often present. When the pain has existed for a long period the effect upon the patient is deplorable; his general health is undermined, and his mental condition profoundly depressed.

"Owing to the very slight departure from normal of the rhinoscopic picture, these cases frequently pass through many skillful hands before the true cause of the pain is recognized. A thorough routine examination of the middle turbinate fossae should, therefore, be made in all doubtful cases. All the more common causes of headaches must be eliminated, such as neurasthenia, eye strain, febrile conditions, syphilis, malaris, digestive disturbances, rheumatism, etc. The absence of pus and the condition of the eye grounds should be ascertained. The general appearance of the lower portion of the nose may be normal, but upon further examination it will be found that, while the middle turbinate itself may be of normal size and coloring, its cavity is narrow and compressed either by the lesser upper (or counter) deviation of the septum, or by a bilateral thickening of the upper portion of the septum, or by a split septum due to injury. Careful exsanguination of the inferior turbinates and their immediate surroundings only should accurately determine the point of contact. The exsanguination alone may so relieve the existing headache as to prove the chief localizing factor of the cause of the pain."

Treatment should be directed to the middle turbinate itself, and should consist, first, in frequent applications of cocain, adrenalin and astringents; and second; as a last resort, the extirpation of a part, or the whole, of the middle turbinate. While the good results of the local applications may be only temporary, the operative procedure usually effects a complete cure of the pain.

Sluder spoke of the body of the sphenoid independent of what cell occupied it, and mentioned the close relations of the nerve trunks to its bony wall, and that the size of the cavernous sinus rather than that of the sphenoid cell was what determined some of those relationships. He spoke of the striking difference, clinically, between the nerves in the canals-maxillary and mandibular branches of the fifth and Vidian compared to the third, fourth, and sixth, which run through the wide gap of the sphenoidal fissure, the former being a clinical question infinitely more often than the latter. The diagnosis was made from bone removed from the anterior part of the sphenoid sinus of one hundred and fifty-six cases by Dr. Jonathan Wright, whose microscopic findings corresponded almost uniformly with cases clinically. The slow growing bone increase had for its clinical history long-standing pain and often very slow progressive loss of vision, sometimes only a segment of the optic nerve being involved, the cases of violent headache and rapid loss of vision showing acute ostitis engrafted on the

chronic process. The bone sometimes showed periostitis, and sometimes the mucous membrane was normal. The argument was that the clinical picture in the chronic cases arose from narrowing of the bony canals in the process of the hyperplastic bone changes, and that the optic nerve was thereby compressed in the optic canal, producing disc swelling with loss of vision. That the recurrent pain in the second division of the fifth and Vidian—usually diagnosticated migraine—was explained also by narrowing of the confines. In many of the cases these headaches preceded the optic nerve troubles by many years. He attempted to explain this on the score of drainage, the lower part of the sinus usually being bathed in a small amount of thin secretion, whereas the optic and the upper part was not so. He thought the hyperplastic lesion rendered the district more vulnerable, and cited that small areas here become inflamed from unrecognizable origin, and according to their position were more or less disastrous. In the upper outer anterior aspect of the sinus, loss of vision occurred; and in the lower outer and lower middle parts, great pain of maxillary and Vidian distribution, respectively. He raised the question, how lesions of this kind could be bettered by removal of bone for drainage. He did not believe that the primary blood letting of the surgery explained it, and cited a case in argument thereof. He stated that a similar lesion in the anterior nose, where very easily visible, was subject to recessions of longer and shorter duration, and that the condition was apparently helped by judicious surgery. The degree of hyperplasia of the plica septi seemed to be an index of the hyperplastic process in the sphenoid, whereas the degree of hyperplasia of the posterior tip of the middle turbinate seemed an index of a similar condition in the postethmoid.

In the discussion which followed there were some divergent views according to the experience of each speaker. It was believed that pus could often be found even if in small quantity and in some instances this find was of value in the preparation of an autogenous vaccine for the treatment of stubborn cases that did not otherwise yield.

Headaches nasal in origin may be persistent after the removal of the original cause, due partly to habit which plays so important a role in the human economy, and also to the fact that there may be an associated malarial state.

Careful questioning will elicit the fact that there is a distinct periodicity to the attacks of violent headache. The plasmodium may be absent, as it often is in chronic malaria, nevertheless the

periodicity would point to the diagnosis and here I have seen remarkable cures follow a short treatment of ergot and quinine. It is given in the following manner. A mixture of two drams each of the fluid extract of ergot (Squibb) and elix. cinchona is given at six-hour intervals with six grains of quinine at each dose, the patient remaining in bed during this time. Nine grains of quinine are given daily for some days thereafter. In purely chronic malarial conditions the headache subsides, never to return.

In Abscess Conditions. Surprising results may follow intranasal operation, when in abscess conditions the pressure is relieved as is illustrated in an instance where the operation amounted practically to a decompression. The patient, male, aged twenty-one years, was admitted to Mount Sinai Hospital, in New York City, to the Medical Service of Dr. Morris Manges, on November 3, 1914. Eight years previously he fell from the roof of a four story building and struck on his head on the stone pavement. He was unconscious for a time; started to grow rapidly and now has larger hands and feet. Two days before admission he had sudden abdominal cramps, vomiting and fever. Had low unilateral headache, dull in character. Patient shows typical meningeal symptoms; hips and thighs flexed; head retracted; low muttering delirium. A lumbar puncture was done, thirty cubic centimeters of clear fluid being obtained under high pressure. Eyes: Fundi negative. General condition poor. Neurological examination: Leontine expression. Large phalanges. Weak external rectus. Blind left eye. Right temporal hemianopsia. Diminished left abdominal reflex. Diminished left knee jerk. Weakness in hands and left side of face. Tongue protrudes to left. Diagnosis: Diseased process about optic chiasm involving entire left and decussating part of right optic tract. If primary cause is in ethmoidal cells or a pre-existing acromegaly, X-ray must determine. Probably old lesion abscess lighted up by recent infection.

Rhinoscopic examination: This was exceedingly difficult as the patient was delirious and resisted mightily. Nevertheless a mucopurulent discharge was found in the right ethmoidal region and the condition was diagnosed to be due to sphenoidal sinus obstruction.

X-ray examination, November 6th: Sella turcica very much enlarged. The anterior clinoid process is very much thickened, the posterior disc apparently absorbed. Bone of the skull, with the exception of the frontal region very much thickened. Judging from the appearance of the sella turcica this is a case of tumor in the hypophysis.

Widal negative, also complement fixation test for lues.

Temperature ranged from 103 to 105.2 degree F. from November 3rd to 9th. On November 8th, under ether anesthesia, the right middle turbinate was freely removed as also the ethmoidal cells. The left middle turbinate only partly removed. Probe readily entered the sphenoidal sinus on the right. Temperature became normal the next day.

Vision was restored and the patient made a complete recovery from all his threatening symptoms. The diagnosis of akromegaly, acute basilar meningitis, paratyphoid fever and ethmoidal abscess had been made.

It would seem that this patient had an abscess about the hypophysis that a decussating operation was really done the drainage effecting a cure. This hypothesis is substantiated by the clear X-ray photograph here presented which shows a probe lying in the sphenoidal sinus as clearly as though there was a split skull of a cadaver with the probe lying within, as also by the fact of the prompt drop of his temperature after operation, the return of his vision and clearness of his mentality.

In Nasal Dysmenorrhea. For many years the writer has paid considerable attention to the relation between the nose and dysmenorrhea and his observations of 93 cases have been recorded[1]. Since that time the treatment has been continued and the same remarkable and gratifying results in a goodly proportion of cases has been noted.

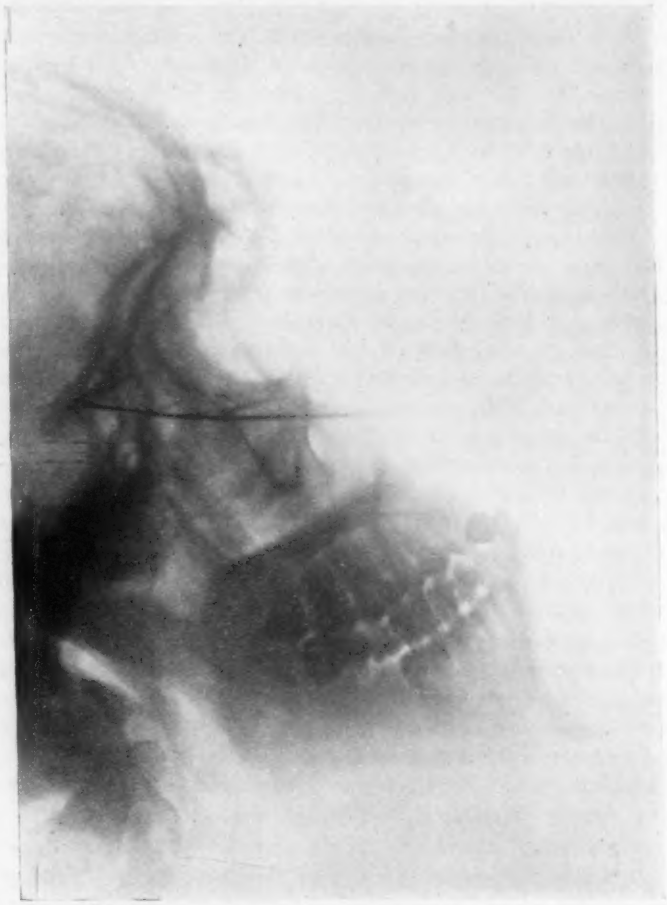
While due credit is given to Fliess[2] for elaborating the treatment, in 1897, we are indebted to our fellow-countryman end colleague, John N. Mackenzie for priority in that he first called attention to the relation between the nose and the genitalia. Mackenzie began his work in 1879 and in 1883 stated[3]: "That in the nose there exists a definite, well-defined sensitive area whose stimulation, either through a local pathological process, or through the action of an irritant introduced from without, is capable of producing an excitation which finds its expression in a reflex act or in a series of reflected phenomena.

That this sensitive area corresponds in all probability with that portion of the nasal membrane which covers the turbinated corpora cavernosa.

That all parts of this area are not equally susceptible to irritation, the most sensitive spots being probably represented by those of the membrane which cover the inferior half of the lower tur-

binate bone and the erectile body on the septum immediately opposite."

This surely is a clear enough delineation of the presence of the



X-ray picture of a case diagnosed as a "diseased process about the optic chiasm" showing probe lying in the sphenoidal sinus.

genital spots of Fliess outlined by Mackenzie fourteen years previous.

We are glad to make this correction and place the credit for priority to our confrere.

For the practical application of this relationship we are indebted to Fliess (loc. cit.) who found that these genital spots swell during menstruation, bleed easily, and are slightly cyanotic. He found that an application of a 20 per cent solution of cocain to these spots immediately relieved the pain in dysmenorrhea.

With the subsequent development of this work and the treatment instituted by him for the relief of dysmenorrhea you are fully aware.

For my own part I felt that galvano cautery applied to the genital spots might occasion synechiae and much subsequent nasal discomfort and have therefore used the trichloracetic acid exclusively. This latter never has any bad after effects.

From many communications I found a great deal of misconception as to the actual site of these genital spots and a feeling of uncertainty as to the exact site of the tuberculum septi and hence that point is here elucidated. Zuckerkandl, whom nothing escaped, says that the tuberculum septi is an elevation on the nasal septum directly opposite the lower end of the middle turbinate. The inner part of each inferior turbinate and the tuberculum septi of each side are the genital spots. Too much stress can not be laid on the fact that the treatment must be applied to these spots only.

A well-known gynecologist stating his gratification at the results attained by the rhinologist was told that he was not so enthusiastic formerly, and he answered, "Very true, I attempted the rhinological treatment myself and I failed; I then sent my patients to an expert and now I get results."

It is most interesting to note the normal appearance of the nose in these patients. The tuberculum septi is often very prominent and the inferior turbinate engorged. During menstruation the genital spots are especially engorged and a local application of cocain reduces the engorgement and the pain is alleviated. As a rule these patients who are promptly relieved by cocain are the ones who are surest to be benefited by the intranasal treatment.

Where actual obstruction occurs such as deflected septa, enchondroses or hypertrophied mucosa over the turbinates, surgical intervention adds to the certainty of permanent relief.

It must be borne in mind that the cases of dysmenorrhea that we thus see are extremely aggravated ones, as those having slight pains accept their condition as being only natural and hence the fact that so large a percentage are cured is a cause of deep gratitude on the part of the patient and satisfaction to ourselves.

The cases treated by myself were in the large majority of instances sent to me by the gynecologist who found no pathological condition to occasion the dysmenorrhea. The histories were then carefully noted as to the time of pain, whether before, during or after menstruation, and its severity, whether headaches or nausea existed, the number of days each month that the patient was incapacitated, the regularity of the menstrual flow, and the date of the last and next menstruation ascertained.

If possible the nose was treated at the time of menstruation with cocain to note if relief could be obtained thereby and it was almost invariably found that those who were so relieved would be helped by the cauterization of the genital spots. I saw a young lady recently who was in bed and having the severe pains and nausea of beginning menstruation. Cocain was applied and the relief was immediate. She asked for her lunch and three hours later was comfortably seated in bed reading. Another application was followed by a restful night. The next morning her pains were as usual. Where this treatment is not possible, the patient is directed to come for treatment a few days after a period and the nose is cocainized with a 5 per cent solution of cocain. A small, moist cotton applicator is now dipped into crystals of trichloracetic acid which have been placed in a shallow dish and the genital spots are freely swabbed with this application.

Sometimes there is much reaction, a slough forms and the patient feels as though she had a cold, and it becomes necessary to reassure her. As a rule the discomfort is not great. I have, however, known two hyperaesthetic individuals to decline further treatment as it was unbearable.

Four applications of the trichloracetic acid are made at five or six day intervals, between the periods, the old slough being wiped off before a new application is made, and the patient requested to report after the next period.

If no benefit whatever is obtained, no further treatment is given as a rule. There are some exceptions, such as where the patient makes the request for another attempt and then four more applications may be given in the same manner.

Where benefit is obtained, I have found it advisable to make a second series of four more applications in the hope of securing a more lasting benefit.

The duration of the benefit obtained varies. In a large percentage of cases the relief is permanent. I have recently seen one

of the most aggravated cases treated by me three years ago, who has not had any disturbances since then. Before that time she suffered intensely for years and required a hypodermic of morphine each month and could always count on the loss of three days at each menstrual period. One of the recent cases may well illustrate the manner of treatment: Patient thirty-two years old, married, no children, first seen May 3, 1915. Dr. Brettauer found no uterine disease. Has severe pain for one week before each period, severest on the first day, nausea for two or three days. Compelled to stay in bed from three days to one week. Last menstruation April 12th, next May 10th. Within seven days, owing to the nearness of the menstrual period only two applications of the trichloracetic acid were made. She had no premenstrual pain. On the day of menstruation pains came but were checked by the application of 5 per cent cocain, which I made while she remained in bed. Her condition was remarkably improved for the rest of that period. During the next four weeks, on May 13th, 18th, 24th and 29th, applications were made. On June 7th she menstruated without previous pain or at the time. On June 7th, 12th, 17th and 22nd applications were made. In July, no pain whatever; in August, slight discomfort; in September, pain relieved by cocain and applications made again on September 13th, 20th, 25th and 30th. In October, no pain, and since then none. This patient appreciates the relief obtained and cheerfully applied for additional treatment.

Another illustrative recent case is that of a girl aged twenty-one years, whom I first saw on January 14, 1915. Always feels draggy and has cramps one week before menstruation. Three hours after flow is established is compelled to go to bed, has severe cramps on the second day. Relieved partly by codeia and gin. Loses two to three days monthly. Feels very nervous and restless at those times. Last menstruation December 25th, next one January 22nd. One application only could be given as she menstruated on January 20th with no pain whatever before flow was established, and no cramps after. A wonderful improvement after a single treatment. Trichloracetic acid was applied on January 26th, and February 1st, 6th and 11th. Menstruated on February 12th without previous pain. Was able to go out on the first day of menstruation, a thing she had never before been able to do. She had slight cramps thereafter, but required no sedative. On March 16th she menstruated without any pain. Four applications were then made at the usual intervals and on April 15th she menstruated without

pain and had no nervousness whatever. No further treatment. She has remained well since.

One more recent case was that of a twenty-one-year old stenographer who had heard of the results of nasal treatment and came direct to me on October 5, 1915, hence no gynecological examination was made. Menstruation was always painful the first day, compelled to go to bed and is unable to follow her vocation, losing one day each month. No nausea, but loss of appetite. Relief after first twenty-four hours. Last period September 30th, due next October 28th. Septum deviated to the right, especially in the upper and bony portion. As applications could easily be made the trichloracetic acid was applied on October 5th, 11th, 18th and 23rd. Menstruated October 25th, slight pains. Did not have to go to bed for the first time since menstruation began. November 12th, I performed a resection of her nasal septum under local anesthesia.

Menstruated November 30—four days late. Was able to keep at work all day. Had some pain at night on retiring. This was the first time that she had been able to keep at her work on the first day of menstruation.

One of the most interesting cases was in the first series recorded and is the last one which I shall here present. It has remarkably unusual features. Patient twenty-eight years old, married eight years, no children, first seen October, 1911. Suffers excruciating pains immediately before menstruation and until the flow is fully established. Severe nausea and extreme exhaustion following. Incapacitated two days each month and looks forward to menstrual period with great dread. Has been curetted four times without relief. Has deflection of the cartilaginous and bony nasal septum, which I resected. Following this the genital spots were cauterized with the galvano cautery. Menstruation regular and painless for the next six months. Six months later she reported with a note from Dr. Brettauer saying that she was four months pregnant. She subsequently brought her baby, a fine, healthy child to my office.

These cases follow the same course as indicated in a previous paper in which I recorded the results of treatment of ninety-three patients suffering from dysmenorrhea and the results then obtained have been still further verified. Every care was given to avoid the possibility of any suggestion and the amount of cocain used was far too small to produce euphoria. That localized congestion thus removed seems to be a factor in the relief obtained

there is hardly a doubt, for in those cases where pathological conditions were removed the cure was complete.

Of interest too was the fact that menstruation became more regular after treatment than before. Where it had appeared every three weeks, it now came after an interval of four weeks. Furthermore, in several cases of amenorrhea where no menstruation had occurred for over a year, the flow became normal and after treatment for two or three months with the trichloracetic acid at five-day intervals.

In four of the cases previously recorded pregnancy followed the cessation of the dysmenorrhea.

As a result then of my further experience with this method of treatment I can reiterate my firm conviction that the conclusions then made are still applicable: "That permanent relief is obtainable by intranasal treatment in from 50 to 75 per cent of the cases; the trichloracetic acid applied four times at proper intervals between the periods is usually sufficient to obtain lasting results and finally that it affords an additional field of usefulness of the rhinologist.

The success of this simple form of treatment free from the need of frequent gynecological examinations or surgical interference should surely be hailed with great joy by every modest woman.

Since the publication of my article several colleagues have written me and informed me of their successes.

I have thus outlined to you some of the more or less remote affections of the human body that have been relieved by intranasal treatment. There are other conditions such as coughs, disturbed mentality, etc., that now and then also yield to intranasal treatment, but I feel that I have taxed your patience sufficiently and I want to thank you for the honor of your gracious invitation, and to express my very great pleasure at being able to be with you and to meet so many of you, some of whom have been my personal friends for years, and nearly all of you known to me by your contributions to our special field of medicine.

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THE BLOOD-CLOT DRESSING IN CLOSING THE WOUND IN OPERATIONS FOR SIMPLE MASTOID ABSCESS.*

DR. K. K. WHEELOCK, Fort Wayne, Ind.

This paper is based upon my experience in thirteen consecutive operations for simple acute mastoid abscess in which I have closed the wound primarily employing the coagulated blood as a dressing for the dead spaces in the exenterated mastoid.

These thirteen cases had a necessary detention in the hospital of ninety days. This would show an average of 6 12-13 days for each case, and, to be absolutely specific, all left the hospital at the end of seven days except one, who left on the sixth day. This patient developed a mild attack of erysipelas on the fourth day, but the mastoid wound was not invaded. Psychic conditions peculiar to the patient made it better for her to go home and I made but three or four visits to her after her departure from the hospital. The mastoid wound did not make the visits necessary because the wound had healed with a linear scar with two points of stitch abscess.

Another case of a young woman with a nursing baby developed a double mastoid abscess with suppuration from both ears. Her mastoids were exenterated and closed with catgut sutures over a blood-clot dressing. She left the hospital on the seventh day, returning to her home in the country twenty miles distant, and I saw her twice afterward. The left skin wound opened for one-half of a linear inch, and for the depth of the skin. This closed under a scab and was dressed a few times by the family doctor, who applied a pad held in place by rubber plaster.

It has required nine years for me to arrive at a conclusion concerning the value of blood-clot dressing which should have been immediate, if tradition, rather than reason, coupled with knowledge, had not guided my way. And I can assure you it was necessity which brought me the courage to try the blood-clot dressing in a modified form in the first instance.

I had operated a child two and a half years old for acute mastoid abscess following scarlatina, and the father would not leave the child, who was very nervous. I concluded on the second day that I would withdraw the small roller gauze drain, close the wound with a sterile pad and send the child home. Further dressing or

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manipulation seemed out of the question and I made a virtue of necessity and left the wound dressed. Each day the dressing was inspected, and as it seemed to be satisfactory I left it in place. In ten days the wound was quite solidly healed. I began to think it feasible to close the mastoid wound with a blood-clot for a framework.

My next case was a young girl of fifteen years who was convalescing from an attack of typhoid fever, in the course of which she developed a mastoid abscess. She was weak, nervous and apprehensive of pain. The wound was closed with catgut suture over a blood-clot, and in seven days the wound was solidly healed and she could have left the hospital, so far as the ear was concerned. Her physicians, Drs. George W. McCaskey and Miles Porter, Jr., kept her in the hospital until a large bed-sore, which had developed previous to her coming to the hospital, had healed.

Since this case I have closed all wounds over the blood-clot in simple acute mastoid abscess with the astonishing result of an average hospital attendance of seven days. In the face of my experience it would seem fair to give the method a trial; yet such is the force of custom and habit that even an ocular demonstration is not sufficient, as I was made aware in an experience with one of my colleagues last winter. In the case of a young woman twenty-four years old, in whose case I was called in consultation and requested to operate, I asked the doctor if he had had any experience with the blood-clot dressing, and he said he had not. I explained the method in detail and when I opened the mastoid we found the sinus and dura exposed. He said, "You would not use the blood-clot dressing in this case, would you?" I told him I had used the blood-clot dressing in cases with much larger exposure of the dura and sinus with perfect success, and would use it in that case. He expressed astonishment at the short time required for healing and the short stay of the patient in the hospital.

I am aware that many of our best surgeons do not use it, or have used it and put it aside. You all know that the use of the blood-clot for closing dead spaces in bone is an old procedure and founded upon perfectly scientific data.

This method of closing the wound in mastoid operations was first proposed by Dr. F. B. Sprague, of Providence, R. I., and put into practice by Dr. Clarence John Blake, of Boston. Twenty-five years ago Dr. Blake began his experiments with the patient's blood as a framework for closing and reconstructing the bone in a mastoid wound, and he has written largely and enthusiastically upon the

results. I heard his paper, "The Value of the Blood-Clot as a Primary Dressing in Mastoid Operations," read at the Toronto meeting of the British Medical Association in 1906, and I dismissed the consideration of it with the thought that the method was a fad and a dangerous one. But now, with results which have added so much to the comfort of my patients, which have so shortened the time of detention in the hospital, which have left only a fine line in a rounded mastoid contour, I feel that I want to excite your enthusiasm to an equal pitch with mine and to the end that we may use the blood-clot dressing as the safe and conservative dressing for the closure of the exenterated mastoid in cases of acute abscess of this bone. I have nothing to add to the operation either in the way of technic or physiologic knowledge of the blood as a natural germicide and physical framework for the growth of osteoblasts. It must, however, be insisted that the surgical operation be a complete one, both within the exenterated cavity and upon the overlying soft parts. Every vestige of softened bone must be removed without consideration of the extent of the removal or of the parts involved. We must go to the dura within and to the skin without. Every bleeding part in the osseous cavity must be regarded as a source of possible subsequent infection and removed by the curette. After the mastoid cavity has been made clean from the tip to the bottom of the antrum, a free incision is made in the drum high up and a piece of rolled gauze inserted down to the incision in the drum after the canal has been made clean with alcohol, ether and hot sterile normal salt or alkaline solution.

I use no fluids or chemicals, such as bichloride, in the mastoid cavity, nor any preparations which would lessen the germicidal powers of the blood-clot to be subsequently used. Sterilization of the skin is secured by a painting of the skin surface with a 2 per cent. solution iodine; the external ear and the hair line as well for an inch within its border. The hair is not shaved or disturbed in any manner. This, however, is a matter of individual interpretation. After considering the results following the use of the blood-clot in closing the dead spaces in the operation for mastoid abscess we find them superior to the results obtained in the usual method of packing with gauze and securing the closure of the wound by granulation. The results are better in three particulars and they comprise about all that goes to make up good surgery, viz., rapid healing, no pain to patient in dressing the wound, and no deformity. I am recounting my successes. I have had no failures. Yet I am not insensible of the fact that others have had failures and they have been such as have led them to abandon the method.

I do not presume their failures have been due to bad technic, because they are masters in their special work. At the 17th International Congress of Medicine, held in London, in 1913, Prof. Mygind, of Copenhagen, read a paper on "Secondary Suture After Simple Resection of the Mastoid." He said:

"There is no doubt that there are many drawbacks attached to the ordinary after-treatment of simple resection of the mastoid process for acute osteites by the filling up of the osseous cavity with granulation. The chief of these drawbacks is that the healing process is lengthy, taking generally from six to twelve weeks. Thus the average duration of the cases not complicated with cerebral abscess, sinus thrombosus or meningitis treated at the Ear and Throat Department of the Copenhagen Commune Hospital is about seventy-four days.

"It would, therefore, seem reasonable to suppose the various efforts made to abbreviate and simplify this after-treatment would have been received with interest, and also that surgeons who had been successful in their attempts would have found followers. This, however, had not been the case, and two methods which in particular mark a distinct progress have not gained the recognition they deserve. I refer to the use of primary suture after filling up the cavity in the bone with blood-clot, as first suggested by Frank B. Sprague, of Providence, U. S. A., and first performed by Clarence Blake, of Boston, in 1906. * * * I have for some years in a number of cases which are suitable for such treatment used primary suture, and have obtained primary healing."

I may perhaps explain that these remarks are preliminary to Mygind's description of the use of the blood-clot in closing the mastoid wound in from eight to twenty days after doing resection primarily and using gauze packing. As a matter of fact, I do not see that Prof. Mygind's operation for secondary suture differs in any essential from the method I employ for primary closure. He opens the wound and scrapes out all soft granulation tissue, freshens the edges of the wound and then allows it to fill with blood which he permits to coagulate. Under this method the aditus to the antrum is closed off and reduces to the minimum the danger of this avenue for infection of the blood-clot. I wish to refer again to Prof. Mygind's paper and quote:

"The following figures will show the extent to which this method abbreviates the after-treatment of resection of the mastoid process. As I have already mentioned, seventy-four days is the average time at the Copenhagen Commune Hospital's Ear and Throat De-

partment for closing the cavity in the mastoid process with the usual treatment, whilst the corresponding figures for cases of secondary suture which healed, practically speaking, *per primam* was only twenty days."

We must not forget that there is a marked difference in the recuperative power between patients who attend a public clinic and those who come to your private office, and the difference is in favor of the private patient.

Some who have not followed the experiments upon the blood and are not familiar with the fresh blood as a natural germicide, will be led at first blush to regard the blood as a first-class culture medium for the development of micro-organisms and feel that they are locking up in an infected cavity all the elements for a first-class case of suppuration. Such, however, is not the case.

Dr. H. O. Reik, of the Johns Hopkins University, has been an enthusiastic investigator in the use of the blood-clot dressing, and, that I may get him squarely on view, I will quote from his article, "The Blood-Clot Dressing in Mastoidectomy, Considered Physiologically," printed in *A. M. A. Journal*, March 31, 1906:

"If a mastoid wound be dressed with sterile or antiseptic packing at the time of operation, the period of healing will vary from three weeks to several months. Very rarely will complete closure occur in less time, and I have frequently seen cases that required dressing over a period of six months." I wish to quote a little further from this paper: "The primary object of this dressing is to obtain healing of the wound by first intention, but when this occurs other advantages accrue; for instance, the normal contour of the mastoid process is restored, the resulting scar is a mere line and the period of healing is reduced to five or seven days, with practically no after-treatment. No deformity, almost no scar, and primary union constitute on the whole a stake worth playing for. On the other hand, in cases in which the blood-clot fails to organize there is no additional risk to the patient. * * * The wound may be dressed and packed in the usual way."

Many investigators in the realm of physiology have come to the same conclusion in regard to the germicidal properties of the blood. Metchnikoff, Nuttall, Fodor, Vaughn and Novy have published their findings. From their experiments we may draw the following conclusions: The normal human blood possesses, in varying degree, bactericidal power; this power is greater in drawn blood than in blood circulating in the vessels; the microbe destroying substance is found in the serum, but is resident in the leucocytes; the germ-

icidal power of the blood diminishes after forty-eight hours and is soon lost altogether. If 16,000 germs were injected into an animal, the animal still lived, whereas, if more than 16,000 were injected, the animal died. If 16,000 of the same germs were placed in 1 cc. of blood drawn from the animal, all the germs were destroyed in a few minutes and after a few minutes more no germs could be reproduced from the clot.

Vaughn and McClintock showed to their own satisfaction that the leucocytes produced a proteid which has the power of destroying germs and that the proteid is attributed to nuclein. I do not wish to do more than recall to your mind the results of the physiological experiments upon which the germicidal property of the blood rests.

A principle to have universal application should always work in the same way. But a principle which fails in its application may fail because of technic or because the premises may be perfect in one case and not in another. I cannot do better in closing this paper than to quote from Blake's paper referred to above and read at the Toronto meeting of the British Medical Association in 1906:

"4. That the blood-clot is not an inert filling material merely, but has in its serum a protective defence viable for at least forty-eight hours after formation of the clot, and its clot a repair material capable of effecting closure of the antral and the surgically produced cortical openings and of traversing the unified mastoid space.

"5. That the use of the blood-clot completely filling a carefully exenterated mastoid cavity results, when it persists, in healing by first intention in a varying percentage of cases.

"6. That the persistence of the blood-clot during the period of its protective viability only, even though it then break down and come away entirely, results in the formation of foundation granulomata, which are a basis for subsequent repair with speedier and more satisfactory results in healing than are obtainable when the wound is dry-packed from the beginning.

"8. That the only cases to which the blood-clot dressing is inapplicable are those in which, on account of pyogenic invasion of surrounding structures, it is desirable to keep the mastoid cavity open as a path of access, and those in which a systemic condition of the patient, or the extent of the local infection, does not warrant the expectation of speedy repair."

Some will say that the principle of the blood-clot is bad surgery. If bad surgery produces such brilliant results, let us have more bad surgery, for, in the final analysis, results are what count.

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THE IDEAL MASTOID OPERATION.*

Dr. H. O. Reik, Baltimore, Md.

I have chosen a somewhat unusual title for my paper, and I intend to present a paper of somewhat unusual character, though I trust that neither the title nor the relating of my personal experiences and views will be taken to savour too strongly of conceit. This may not prove to be a good paper, from a literary point of view, but I anticipate that it will at least arouse some discussion, and I shall be rather disappointed if it should fail in that particular.

As a basis for our discussion, and trusting to find some common ground upon which we may all stand, some point of universal agreement from which to start, it may be well to define the term "Ideal Mastoid Operation." I take it that we all approve of ideals as guiding stars in every field of work or walk of life. We may not always live up to our own ideals, but we must recognize the necessity for striving constantly so to do. What then constitutes an ideal mastoid operation, and permit me to say here that I wish to limit this consideration to the operation of simple mastoidectomy, and shall not refer in any detail to the operation of mastoido-tympanal exenteration, or so-called radical operation, though much that I shall have to say might be equally well applied thereto. To put it tersely, I should define an ideal mastoidectomy as one that submitted the patient to the least additional risk, and offered the maximum assurance of cure in the shortest space of time with a minimum of deformity, or scar, as a sequel. I expect you will accept that definition as being essentially good and comprehensive. Least danger, greatest assurance of cure, rapidity of cure, and, completeness of cure, those are the important elements to be considered when determining upon the ideal operation, because failure to comprehend any one of these would bar an operation from the ideal class. For instance, however well devised an operation might be, if its performance added materially to the risks and dangers the patient already faced in the disease itself, it would not be an ideal operation; or, unnecessary prolongation of the period of recovery or an unnecessarily large or unsightly scar would prevent a skillfully performed and practically dangerless operation from becoming truly ideal.

*Read at the Annual Meeting of the Pacific Coast Oto-Ophthalmological Society, San Francisco, June 17, 1915.

Applying this definition of an ideal operation to the subject under consideration, the question arises at once, which of the existing methods of performing mastoidectomy best meets all these requirements? You have probably anticipated my answer, and expect me to say, the complete mastoidectomy with a blood-clot dressing in the effort to procure primary union. If that is the ideal operation as evidenced by results, and if it be true, as we unanimously hold publicly, that all men do or should aim at the ideal, why is it not universally and constantly employed? Is attainment of this ideal beyond the average man, or, is the average man so satisfied with *fair* results that he is unwilling to strive for the *best*? Is idealism so much more commonly professed than practiced? The fact that I ask these questions carries the inference that at least some of the mastoidectomies performed to-day are not of an ideal character, and the implication that possibly some operators do not make a very desperate effort to reach the ideal.

I am going to ask your permission to talk freely here to-day, and for the reason that my remarks cannot be taken as in any sense personal. My home is three thousand miles away. I have seen many mastoid operations performed in the eastern portion of the United States, and in the large cities of Europe. But I have never seen a mastoid operation performed in any of the Pacific Coast states, nor have I seen any surgeon from these states operate elsewhere. I can talk to you then of what I have seen in other parts of the world, and there can be no question of my remarks having a personal application. I may even assume that you are all idealists, that you always perform what you believe to be an ideal operation, and that you are securing ideal results. Perhaps you have an operation that is more nearly ideal than is the one I advocate; if so, I want to know it, and I shall willingly exchange my ideal for yours. One of the nice things about ideals is that they are changeable, and that the change must always be for the better.

I believe it is a fact that the first deliberately performed mastoid operation consisted in drilling a hole through the mastoid cortex with a gimlet, and thus establishing a drainage of the abscess. We should not consider that an ideal operation in this day. And yet, I have, within the year, seen some mastoid operations that were little better than that. In the period that has elapsed since that first operation, many things have happened, and important developments in surgery have made it possible to plan a much better operation for the cure of mastoiditis. By co-relating discoveries in the different branches of medicine, taking one item from physiology,

another from pathology, and others from technical and mechanical advances in surgery, we have been able to establish an operation which approaches perfection. We may differ somewhat in theory as to what constitutes that perfect operation. There is certainly a wide difference in the practical performance of this operation as I have observed it.

Most of you are probably familiar with my views upon the subject of the best method of performing mastoidectomy; if you are not, it is certainly not because I have not sufficiently exploited them. But some of you may not have heard, read or digested them, and I shall use that as an excuse for promulgating them once more, though I promise this time to make the description as brief as possible.

In the first place, I insist upon the strictest asepsis on the part of the operator and each of his assistants. This means: thorough aseptic preparation of the hands and forearms, preferably by the old method of scrubbing, followed by the use of potassium permanganate, oxalic acid and bichlorid solution; the use of sterile rubber gloves; and, the wearing of sterile gown, cap and face-mask. Throughout the operation, the surgeon and the assistants must watch each other, to see that no one becomes contaminated or carries contamination to the operation field. Generally, I have but one assistant at the operating table and one clean nurse (who is prepared in exactly the same way as the surgeon himself) at the side table, to see that each used instrument is washed, first, in carbolic solution, and then in sterile water, before being replaced on the table at the command of the surgeon.

As regards preparation of the patient, I still prefer to have the operation field prepared several hours in advance, whenever that is possible. My preparation consists in shaving an area approximately one inch above and two inches posterior to the auricle, scrubbing this with green soap, using a stiff brush, washing with sterile water, then with alcohol or ether, and covering with a protective pad of moist bichlorid gauze. The ear itself should be carefully syringed and stopped with a pledget of cotton or gauze, and this procedure should be repeated immediately before the operation as the field of operation is again cleansed with alcohol and bichlorid. I do not look with favor upon the substitute iodin method of preparation as I have ordinarily seen it employed. I think it might be used just prior to the operation, but following upon the preliminary preparation that I have described, but I do not think it can take the place of that scrubbing and cleansing. In other words, I am not

convinced that the skin is necessarily rendered sterile simply because it has been stained brown, and I have not that blind faith which some seem to possess in the germ-destroying penetrative powers of an application of iodin.

Having secured a clean field upon which to begin work, every precaution must be taken to maintain it. A sterile rubber cap or sterile towels should be bound around the head in such manner as to prevent any possibility of hair coming into contact with the region of the wound. This is a point that cannot be too strongly emphasized. I have frequently seen hair creep into the field and get pushed into the wound by the assistant when sponging. With the hair held back, and the entire field surrounded by sterile towels, I place over all a sterile sheet having a circular perforation just large enough to properly expose to view the auricle and mastoid region. This sheet covers the entire head and shoulders of the patient, and is fastened by safety-pins to the underlying towels, so as to prevent slipping. By carrying the distal side of this sheet over a suitable metal frame attached to the table, it can be made to shut off the anesthetist absolutely, and prevent any possibility of his seeing or touching anything about the operation. It should not be possible for anybody but the surgeon and his single assistant to come into contact with the operative field.

The instruments are prepared by boiling, in the usual manner, and spread out on sterile sheets covering the instrument table. About the choice of instruments, I have nothing special to say, save that I have become an earnest advocate of the Doyen burr, or some similar drill, for perforating the mastoid cortex. I formerly used the chisel, and I never had any accident with it, nor, so far as I know, caused any cerebral complication from concussion; but I am convinced that the burr has decided advantages; there is certainly no danger of concussion, there is far less danger of injuring the dura, and I can remove the necessary amount of cortex, and expose the antrum, in less time and with greater safety by this means than with the chisel.

Now comes the most important point of all, and upon this I think hinges most of the failures of those who have tried the so-called blood-clot method. I refer to the question of complete exenteration. When is a mastoidectomy satisfactorily concluded? How much bone should be removed, and how can one determine when to stop? Most men do too little, rather than too much. That is the tendency of all the operators I have watched. Really, it is scarcely possible to do too much. Not only all the pus and debris of necrosis, but every particle of infected bone should be removed, and the op-

eration is not ideally completed until that has been accomplished. My rule is as follows: First, establish communication with the antrum; then, remove the superficial cortex down to the tip and, posteriorly, beyond the sinus wall; break up the cellular structure of the mastoid process, with the curette, and remove all this debris. It is not in my opinion necessary to detach the tendon of the sterno-cleido-mastoid muscle nor to remove the mastoid tip; the tip should be cleaned out, not taken away. The mastoid process should be cleansed out as completely as a peanut shell from which the nut has been taken. But, perhaps the inner wall of this shell has shown infection; if so, continue to curette that portion away; it matters not if the sinus or basal dura is thus exposed. If they are found to be affected, they too must be treated. I have found it a good guide to continue curetting as long as there is any bleeding from the bone. Exposed dura over the antrum or sigmoid portion of the sinus is no bar to later efforts at primary healing, and one had far better have exposure of healthy dura in this way than to leave it covered by infected bone. Practically all of the cases of lateral sinus thrombosis coming on several days after mastoidectomy have their origin in conditions of this sort, and might have been avoided by thorough curettage at the time of the first operation. I am sure that the majority of the sinus thromboses secondary to mastoid operations are not the result of the operation, but arise because the primary operation was not sufficiently thorough. Infection spreads from a bit of undiscovered diseased bone to the dural covering of the vessel, phlebitis is set up, and in due time thrombosis. The operator is to blame, but it is a sin of omission, not of commission. Of course, one would not needlessly or carelessly expose the dura or sinus; but if there is any doubt about the character of the bone covering this structure, it should be removed. If you desire to obtain primary union, you must secure a clean wound. A minute spot of infected bone or small infected granulations left will soon infect the clot and cause it to break down, thus upsetting all the previous good work. I am quite certain that failures to secure primary union are more often due to incomplete removal of diseased tissues than to any other single factor.

Is it necessary to follow this with efforts at chemical sterilization of the wound cavity? I do not find it so. In the first place, I have more faith in mechanical than in chemical removal of infection. In the second place, unless the different elements of chemical sterilization are balanced with great nicety, they, of themselves, tend to prevent organization of the blood-clot; this I have explained in great

detail in a previous paper. It is my custom now merely to wash out the bone cavity freely with sterile, normal, saline solution. This is an extension of the mechanical cleansing, permits me to make a last careful inspection of the wound before closing it, and if it has any chemical effect, it facilitates organization of the clot. The cavity is then permitted to fill up with blood, and usually there is quite sufficient oozing from the soft tissues, as the artery clamps are removed, to accomplish this, and the wound is closed with a subcutaneous silver wire suture, or with the Michel metal clamps. Over this, I apply silver foil and a dry, sterile, plain gauze dressing. My preference is still for the subcutaneous wire suture, but the clamps are tempting because so easily applied, and I would only say that when you employ them, they should be removed on the second day, in order to avoid small scars. If primary union takes place, the patient is usually dismissed from the hospital in from five to seven days, and with only a linear scar, which after three or four months, is visible only upon search. Our object will not always be attained. The clot may break down, for any of several reasons, and at the first dressing you will have to remove the suture and insert a drain. Sometimes the entire clot dissolves, sometimes only a portion of it. In the latter event you have gained something, though not all you hoped for. In the event of complete breaking down, you are no worse off than you would have been had you followed the previous custom of packing the wound at the conclusion of the operation.

Now, what are the advantages of this operation, and why do I call it ideal? In the first place, it requires no more time than any other method of mastoidectomy properly performed, because, in all, you are presumed to thoroughly cleanse the wound cavity; but, even if it did take longer, the slight additional time would be spent to the patient's advantage if it succeeded in removing every trace of infection, and thereby shortened this period of convalescence. Secondly, it gives the greatest assurance of cure, because of the very fact that this special care that is necessary to attain success requires more painstaking and complete removal of every trace of the disease, and that is certainly a most important step towards a cure. Thirdly, it procures a cure in the shortest possible time; if primary union is the result, it occurs in less than a week, and the patient can usually be safely let out of the hospital at the end of that time (though he should of course be kept under observation for some time longer); whereas, by any other method that I know anything about, the period of healing varies anywhere from three weeks to three months. But by this method, even when complete primary union is not attained,

the period of healing is generally shortened, because complete breaking down of the clot is not common, and that portion which holds helps to a more rapid granulation and filling of the wound cavity. Fourthly, the resulting scar is almost nil. I could show you patients upon whom this operation was performed several years ago, where you would have to make a careful search to find the line of incision. As a rule, there is no depression and only a faint white line marking the line of incision.

In what percentage of cases may we hope for perfect primary union? My own experience has been that with the cases in which the mastoiditis occurred in connection with acute suppurative otitis media, I have obtained seventy-five per cent of primary healings; while, in those cases where the disease was associated with old, chronic purulent otitis, the best I could do was fifty per cent. However, if I could not obtain more than ten per cent of successes, I would still advocate endeavoring to secure primary union for those patients. The average patient may not know the difference, but if you could see two members of the same family comparing scars and experiences, the one having been allowed to granulate in a course of six weeks and, consequently, having an ugly scar with marked depression, and the other having been dismissed as cured in a week with a primary union and scarcely a blemish, you would conclude that it was worth striving for if success were even very rare.

Assuming that asceptic technique can be controlled, and the skill and judgment of the surgeon are always the same, and always good, can we hope to secure one hundred per cent of primary unions? I trust that day may come, but I am not sure that it ever will. There are not a few extraneous elements to be considered. Some of these are readily apparent, and some are not yet understood. Virulence of the attacking micro-organism and the lack of resistance on the part of the patient constitutes one cause of failure, despite the most perfect work of the surgeon; or, having eradicated the germ and its toxemia, the patient's powers may have been so depleted by his illness that he cannot at once rally his forces for reconstruction work, and hence the clot fails of organization. There are many other possibilities, but it is not necessary to consider them at this moment. The point is, that failure to succeed is not necessarily the fault of the operator; he can only be criticised for failure to try.

The operation is, admittedly, more difficult for the surgeon than a simple opening and draining of the abscess. Is it any more dangerous for the patient? I answer this with a most emphatic *no*.

In all the years that this matter has been under discussion, not a single instance has been recorded of any serious complication resulting from the employment of the blood-clot dressing. Nor is it conceivable that there could be. There are but two things that can possibly happen to the clot; it may become organized or it may break down. In the event of the latter occurrence it seeks an outlet, and, naturally, this will be in the direction of least resistance. Well, can you imagine that by any method of closure of the wound you can seal it so perfectly that it would not remain the direction of lesser resistance than the inner bony wall of the mastoid cavity? Prior to incision of the skin and pereosteum and bone, the inner wall might well prove to be the direction of least resistance for pus, but, once you have made an opening through these structures, that tract becomes very decidedly the easier route for secretions to traverse, no matter what method of suturing you employ nor how securely you close it.

Now, to return to our definition of an ideal operation, I maintain that the operation I have described meets the requirements more completely than any other. It adds nothing of danger to the existing condition; its very thoroughness gives it a greater assurance of producing a cure; the lessened period of convalescence, to say nothing of entire absence of troublesome and painful dressings, is a very decided advantage, for to have completed the task at one move, of itself carries it near the ideal; and, lastly, the procurement of a cure so complete that scarcely any evidence is left that disease ever existed is a matter for congratulation to both surgeon and patient. The operation that possesses these advantages, and that will produce such desirable results in seventy-five per cent of the cases approaches as near to the ideal as we have reached to-day.

I have mentioned my own statistics only; but my success with the method is by no means an isolated instance at the present time. I am very much gratified at the accumulating evidence that this method is being adopted by an increasing number of operators all over the country, and with increasing satisfaction to them. I fear, however, that it is not yet the operation of general usage with the majority of surgeons; and it is partly to stimulate others to adopt it, and partly to call attention to some of the reasons why failure has sometimes attended its use, that I dare to present one more paper upon this subject. This is no longer Dr. Blake's method, nor Dr. Reik's method; it is employed, either occasionally or generally, by a large number of surgeons distributed throughout the land. If Dr. X, of Podunk, can do it successfully, there is no good reason why

Dr. Z, of the metropolis, cannot. I say there is no *good* reason why any competent surgeon should not accomplish satisfactory results with this method. There are reasons, but they are not good and sufficient. Some of those reasons I should like to present and discuss a bit further.

I have suggested that success with the method depends, in the main, upon strict asepsis and thoroughness of operative technique. There is not a surgeon in the world who will not subscribe to those two articles as applicable to any mastoid operation. But does the average surgeon, general surgeon or otologist, really apply them in his daily work? I make bold to say that in my opinion the majority of them do not. I have more than once been disappointed when witnessing a mastoid operation to see men whom I had heard talk learnedly of asepsis and surgical technique, exhibit an absolute disregard for even the cardinal principles of asepsis when at their work. I observed one distinguished special surgeon prepare his hands most carefully, and then, as he walked towards the operating table, put his right hand in his trousers' pocket for something. and then proceed, without further preparation, to operate. I saw another, himself a teacher in one of the large universities, during a period of delay on account of the anesthetic, open the door to admit someone to the operating room, and then return directly to the operation; that door knob may not have been unclean, I do not know, but I must consider that act a breach of technique. While watching a mastoidectomy, performed very cleverly and rapidly by a prominent young surgeon, he asked me if I considered it a suitable case for closure under blood-clot. I said no, and, as he pressed me for a reason, I had to say that even from where I was standing, I could still see granulation tissue which a few moments before had been covered with pus. He expressed some surprise, and said he left that purposely, as he counted upon it as a basis for new growth. I must take issue with that idea of pathology, even in an open, granulating wound, but I insist that it is utterly incompatible with any effort to procure primary healing. It is these little things, the disregard for literal and strict asepsis, that accounts for many failures to secure perfect results. And now I have one more criticism to make of many operators. I have referred to the failure to completely evacuate the cavity of its septic material. The principle reason for that, I believe, is the operator's fear of injuring neighboring structures, and his fear is based upon his ignorance of the anatomy of the temporal bone. There are few things in anatomy more uniformly fixed than the position of the antrum mastoidea or the

lateral sinus, but just watch the average surgeon's approach to them, uncertainty displayed in his every movement.

This sounds like a harsh criticism of the profession, gentlemen —I wish it might be proven to be unjust; but I do not believe it is. And I think the time has come when we must insist upon accurate anatomical knowledge as a preliminary to surgical work, and must expect adherence to the accepted rules of surgical technique. It will be better to discuss these things among ourselves than that the intelligent layman should come to discuss them, and unless we correct them, someone will attempt it from outside the ranks.

This much I do know, that however well one may plan an operation to secure ideal results, idealism will not be attained save by honest effort to live up to every technical point in the procedure, and a faithful adherence to accepted rules.

506 Cathedral Street.

Nature and Treatment of Bronchial Asthma. R. H. Babcock, *Jour. A. M. A.,* June 26, 1915.

The paper deals with the view of asthma as a phenomenon of anaphylaxis or protein sensitization. This supposes the presence in the body of a focus from which absorption of the protein takes place or, on the other hand, it may be that some time in the past, probably in childhood, sensitization to protein had taken place or, perhaps, a sensitization to the protein was inherited.

The foci of sensitization may be multiple and besides their eradication, if possible, the best promise of cure, the author has found, lies in the use of autogenous vaccines. Babcock believes that epinephrin possesses transient antianaphylactic powers, and for this reason, he recommends the subcutaneous injection of ten minims of a 1:1000 epinephrin solution, which in most cases proves to be of great benefit. P. F.

THE TURBINAL ORIGIN OF "BLEEDING POLYPUS" OF THE NOSE.*

Dr. Taro Matsui, Fukuoka, Japan.

In 1892, Victor Lange[1] and Otto Schadewaldt[2] recognized that there is a kind of nasal polypus that is found on the antero-inferior part of the nasal septum and is always accompanied by bleeding. Numerous other authors subsequently reported the same findings and so it came to be designated "bleeding septum polypus."

It is well known that this septum polypus mostly occurs in women and is in some way related to the age of puberty and perhaps also with pregnancy. Out of eight cases Baurowicz[3] reports one case in a male. Another case in a male has been reported by Alexander.[4]

The septum polypus does not invariably spring from the fronto-inferior part of the septum. It may arise from any part of it. Baurowicz[5] reported a case in which it grew on the mucous membrane of the aditus narium. But it somehow always gets on the septum and consequently it is called "septum polypus."

The condition has been given various pathological classifications. Thus it has been termed fibroma, teleangiectasis and angioma according to the individual writer. But, in short, these different names have been given to different stages of growth of the tissue. These differences are caused in proportion to the increase in the connective tissue and the increase in vessels. It is agreed that the growth of the parenchyma is due to the increase in the number of vessels, as in granulation tissue. That malignant tumors may result from this is not questioned.

The *etiology* remains doubtful but it would seem that mechanical irritation of the mucous membrane is greatly concerned in the causation of the condition; and, too, it is generally acknowledged that "rhinitis sicca anterior" (Siebemann) is an important etiological factor.

The writer saw two cases of this growth, in the clinic of Prof. Ino Kubo, both of which grew out of the lower turbinal and bled constantly. But microscopically neither of these is a malignant tumor.

An investigation of these two cases raised the following questions: (1) Is this really the same tumor as that reported as "bleeding septum polypus?" (2) What is the genesis of the growth?

In brief, the histories of the two cases are as follows:

*From the Department of Diseases of the Ear, Nose and Throat, Kyushu University. Director, Prof. Ino Kubo.

Case 1. A. K., age 40, male. Main complaint was stopped up nose with frequent nasal bleeding.

Previous history. No past illnesses and no history of malignant tumors in the family. No syphilis and no hemophilia.

Eleven years ago the patient had an attack of sudden nasal hemorrhage which was treated by a physician. The patient remained well until the present trouble appeared. Since last year he has gradually felt his nose becoming blocked, accompanied by frequent bleeding; there was no fever, no pain and no headache. The bleeding continued at intervals and the blocking finally became so great that the patient was unable to breathe through the right nostril at all. He came to the clinic on March 12, 1910.

Present condition. Physique good, body sound. Nasal septum curved to the left side and attached to the lower turbinal. The right side of the nose was completely blocked by a dark, purple growth with a strawberry-like, uneven surface and yellow moss here and there.

Post-rhinoscopic examination showed the right side in its lower part to be filled with the same growth but the upper part was free from it. The growth showed no adhesion to the nasal septum and the nasal floor but only to the lower turbinal. Diaphanoscopic examination showed the antrum of Highmore to be clear on both sides. There was discoloration at the nose.

The growth was removed by hot snare and the procedure was followed by little bleeding. The lower turbinal healed rapidly and the patient returned home. There has been no recurrence of the growth.

The removed growth was smaller than the tip of the thumb and had a dark violet surface. Microscopic examination showed its structure to be the same as in Case 2.

Diagnosis. "Bleeding polypus" on lower turbinal and deviation of the septum to the left side.

Case 2. M. K., age 19, male. Main complaint was frequent nosebleed; the nose was not stopped up.

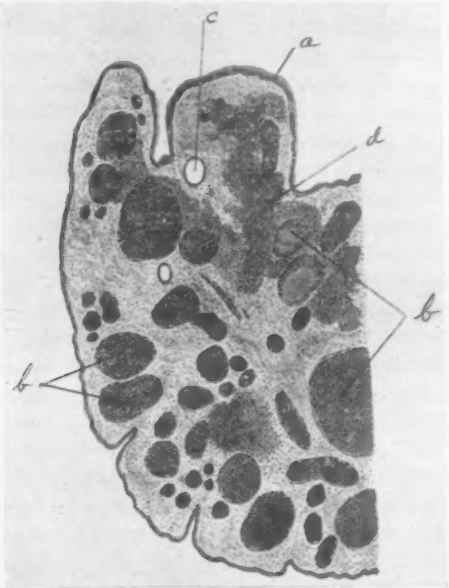
Previous history. No previous illnesses, no hereditary diseases in the family, no syphilis or hemophilia.

For the past two months there has been slight, but frequent, bleeding from the left side of the nose associated with gradual blockage. There has been no other trouble. He came to the clinic November 15, 1910.

Present condition. Physical examination negative. Examination of the nose showed the nasal septum curved towards the right. The left side of the nose was almost entirely filled with a dark, purplish growth. The nasal condition was similar to that in Case

1, only the growth seemed smaller. It, also, had no connection with the nasal septum or with the floor of the nose. It was connected with the lower turbinal, especially the front part of it. It bled easily when probed.

The growth was removed with Krause's sling and the bone of the front part of the lower turbinal exposed. The operation was accompanied by ordinary bleeding. Five days later the wound was completely healed and the patient left the hospital. There has been no recurrence of the disease.



Preparation from Case 2. Leitz, Ocular 1, objective 4. (a) Periphery of the growth with normal epithelium on mucous membrane. (b) Increased and dilated vessels. (c) Decayed glands in the periphery of the growth. (d) Exuded blood in the growth.

Microscopic examination of the growths showed that both were the result of hyperplasia of connective tissue and increase in vessels. The latter were greatly dilated. Nowhere could we find any cells suggestive of malignancy; that is to say, the growths were of the same structure as that of the so-called "bleeding septum polypus." There were many decayed glands, especially around the edge of the tumor. The epithelium of the tumor was of the cuboidal variety, but the edge of it was normal. Exuded blood was found

in the parenchyma, especially near the edge of the growth (see illustration).

As already stated, this growth has usually been found growing from the septum, but Baurowicz[5] found that in one case out of eight the growth takes place from the lower turbinal. The occurrence of "bleeding polypus" outside of the nasal septum can no longer be disputed. In the instances here recorded the growths were on the lower turbinal, especially on its front part. Schmidt and Voltolni also recognize their extra-septal situation, though such is of rare occurrence.

In the cases here reported, the tumors were covered with cubical epithelium, but around the edge the epithelium was normal. The nasal glands had disappeared in the tumors but decayed glands were present near the surface. The bone and periosteum showed no changes and the tumor parenchyma was made up of an increased amount of connective tissue and vessels. The cause of this alteration is not clear. It is hardly possible that it is caused simply by mechanical stimulation or irritation of the mucous membrane of the nose. The metaplasia of the epithelium on the tumors was caused by the occasional bleeding.

Conclusions: (1) "Bleeding polypus" does not occur on the septum of the nose only, but also on the turbinals. Accordingly, the name, "bleeding septum polypus" is erroneous, and it should be classed under "bleeding polypus of the nose."

(2) The tumors are clinically accompanied by bleeding, just as sarcoma or other malignant tumors, but histologically there are no cells to be found suggestive of malignancy. The tumor parenchyma is made up of an increase in connective tissue and vessels and according to the preponderance of one or the other element they may be called fibroma, angioma or fibroangioma.

(3) The tumors originate from the tissue of the gland stratum of the nose.

In conclusion, I wish to acknowledge my thanks to Prof. Ino Kubo for his kind assistance.

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2. O. SCHADEWALDT. Die blutende Polyp der Nasenscheidewand. *Frankel's Archiv.*, Bd. 1, S. 250, 1894.

3. BAUROWICZ. Über die Angioma der Nasenhöhle. *Frankel's Archiv.*, Bd. 1, 1894.

4. ALEXANDER. Bemerkungen zur Anatomie der "blutenden" Septumpolypen. *Frankel's Archiv.*, Bd. 1, S. 265, 1894.

5. BAUROWICZ. Ein Beitrag zur Lokalization der sogenannten blutenden Polypen der Nase. *Frankel's Archiv.*, Bd. 13, S. 451, 1903.

Kyushu University.

A BLOODLESS METHOD OF ENUCLEATING TONSILS.*

DR. E. TERRY SMITH, Hartford, Conn.

To do a careful surgical operation one of two conditions must obtain,—either the operative field must be continually plainly visible, or the operation must be done by the sense of touch. Operating in the dark is dangerous and unsurgical. In describing the method of enucleating tonsils which we have employed for the last three years, I make no claim to originality, but we have had such uniformly good results and such slight loss of blood, that it may be of interest to others.

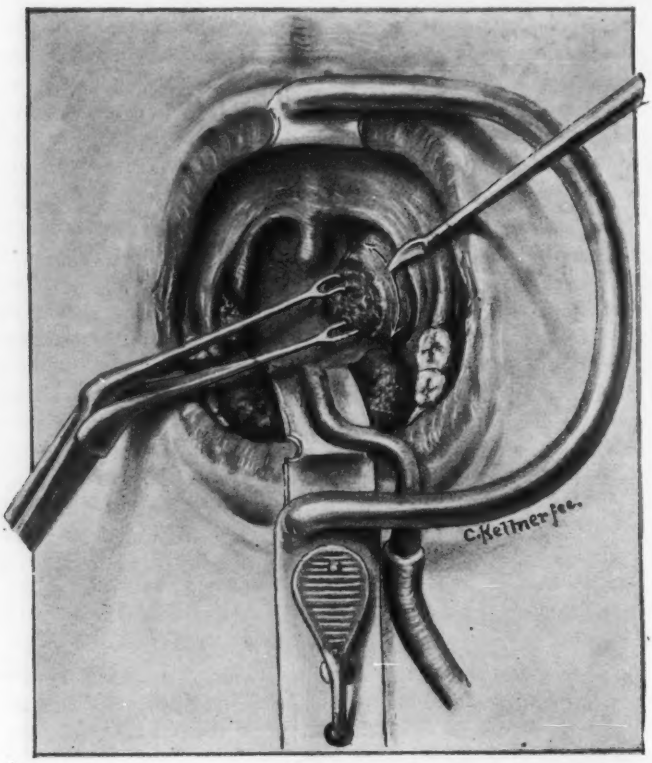
After deciding that the tonsils are sufficiently diseased to be removed, the operation should be considered as a major surgical procedure. The patient should be operated upon at a hospital, and gas-oxygen-ether should be the anesthetic of choice, and should be given through the Davis-Crowe mouth gag. Personally I prefer the recumbent position with the head slightly lower than the rest of the body. An electric headlight is the best form of illumination, and one should have a competent, trained assistant. Since we have been doing our present operation we have not had a disturbing tonsillar hemorrhage. We use a suction apparatus to remove the blood and mucous from the throat and, in the great majority of cases, control any bleeding by pressure. We are always prepared to tie any bleeding points and, if necessary, to sew the anterior and posterior pillars together. We also have a Michel's clamp which has never been used. These little silver hemostats, originally made by Dr. Cushing, and modified for tonsil work by Dr. Crowe, we have found very useful in a number of cases. They are much quicker than tying, and we have known of no bad results from their use. Hemorrhage is caused chiefly by injury to the walls of the sinus tonsillaris, which is inexcusable except in cases where the adhesions are very dense. Infection is also frequently caused by leaving a ragged, sloughing sinus tonsillaris. When one examines the tonsil after its removal, it should not be covered with parts of the superior constrictor of the pharynx.

One should use great care not to injure the posterior pillar or the palatopharyngeus muscle, as any injury that leaves the palate less

*Read before the Forty-eighth Annual Meeting of the American Otological Society at Niagara Falls, Canada, June 3-4, 1915.

free than normal in its backward and forward play has a deleterious effect on the voice.

Perhaps it may be well to give in detail our routine in operative work on the tonsil. All cases are sent to the hospital; history is taken, especially with regard to hemophilia; physical examination is made, including examination of urine and blood coagulation test.

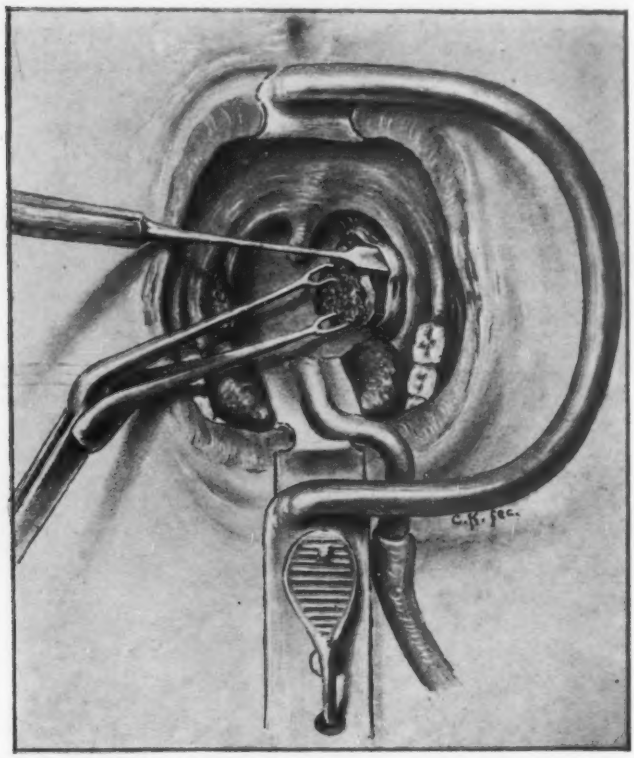


First Step.

If the blood coagulates within ten minutes, I think it is perfectly safe to operate.

We have the usual preparation for a major surgical procedure, and all adults are given a hypodermic of morphine 1-6 gr. and atropine 1-150 gr., twenty minutes before the operation. We use as an anesthetic gas-oxygen-ether.

The photograph on page 120 shows the usual set-up for the operation. The anesthetist is at the patient's left side holding the Davis-Crowe mouth gag. Only slight pressure should be applied to the gag, to avoid wounding the tongue. The assistant stands back of the patient's head with both hands free so as to be able either to hold instruments, use suction apparatus,

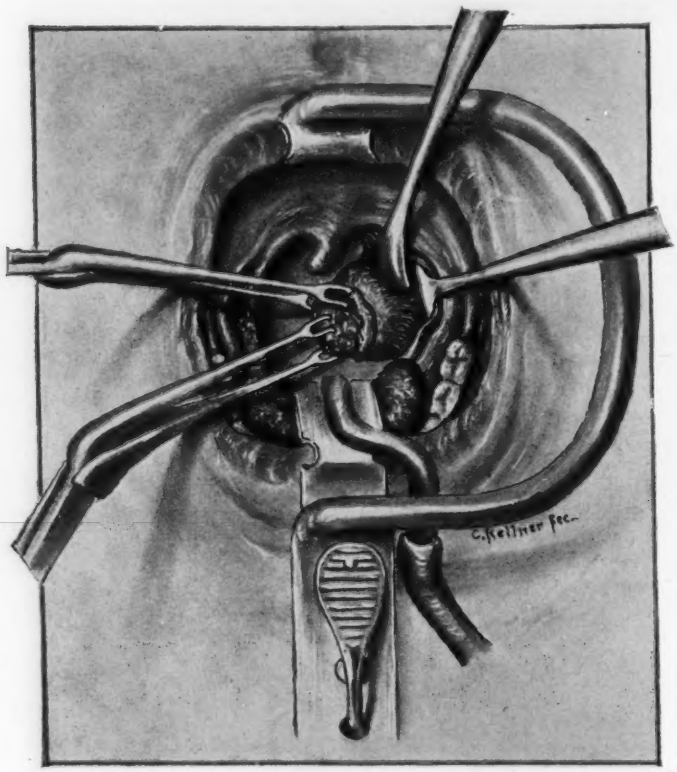


Second Step.

sponge, or control hemorrhage. The operator stands at the patient's right and wears an electric headlight. The instrument stand is at the operator's left. A clean nurse should be at the assistant's right to pass sponges, etc. The patient being in a recumbent position, with the head slightly lower than the body, the mouth gag is introduced carefully so as not to injure the teeth and is opened

wide enough to give a good view of the operative field. (Dr. O. R. Witter's suggestion to tell the patient while going under the anesthetic to keep the mouth open, we have found useful). The patient should not be very deeply anesthetized. This is facilitated if gas is given preliminary to ether.

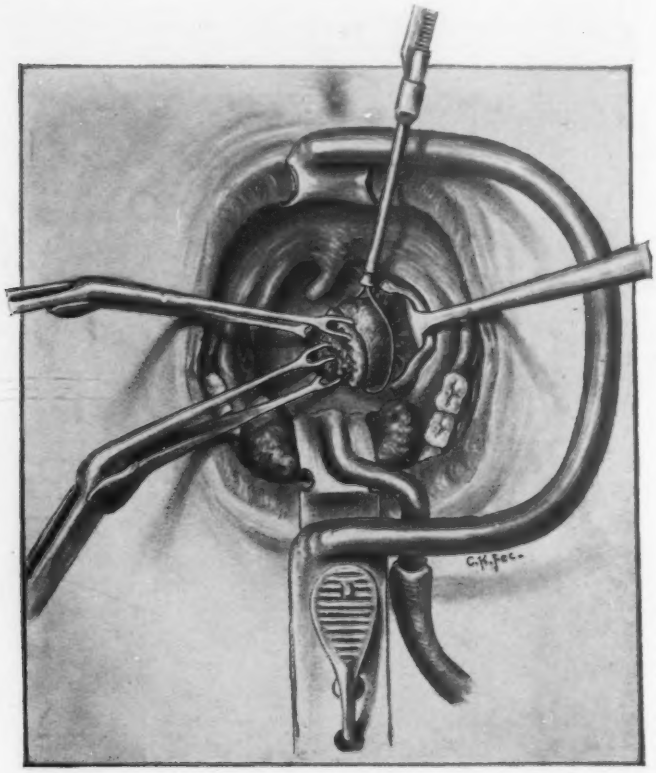
First Steps of Operation: Tonsil forceps are firmly pressed



Third Step.

against the tonsil while closed, are then opened, and a generous amount of tonsil is grasped. (The forceps I use were originally made by Vaast, of Paris, and were recommended to me sixteen years ago by Professor Luc, of Paris. The tonsil is now gently drawn from its bed out into the throat, and an incision is made

through the plica, extending from the middle of the anterior surface of the tonsil to the base of the tongue, care being used not to injure the capsule. Another incision is then made from the beginning of the first incision up over the tonsil and extending down on its posterior surface, care being taken not to injure the palatopharyngeus muscle or the posterior pillar.



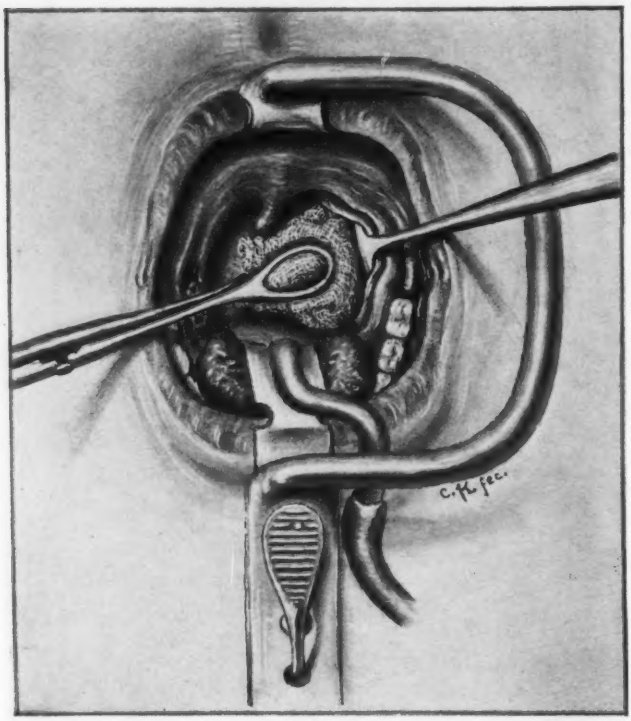
Fourth Step.

Second Step: The tonsil is separated from the anterior and the upper part of the posterior pillar by means of the Carter knife.

Third Step: (Left tonsil.) The anterior pillar is retracted by a Hurd's retractor and held by an assistant, while another pair of forceps is applied to the upper part of the tonsil to help evert it from its bed. Traction is applied to the tonsil and it is dissected

by blunt dissection from the sinus tonsillaris, care being taken not to injure the capsule.

Third Step: (Right tonsil.) The procedure is the same as with the left tonsil except that the anterior pillar is retracted by operator, and traction on tonsil is applied by assistant, while operator dissects tonsil by blunt dissection.



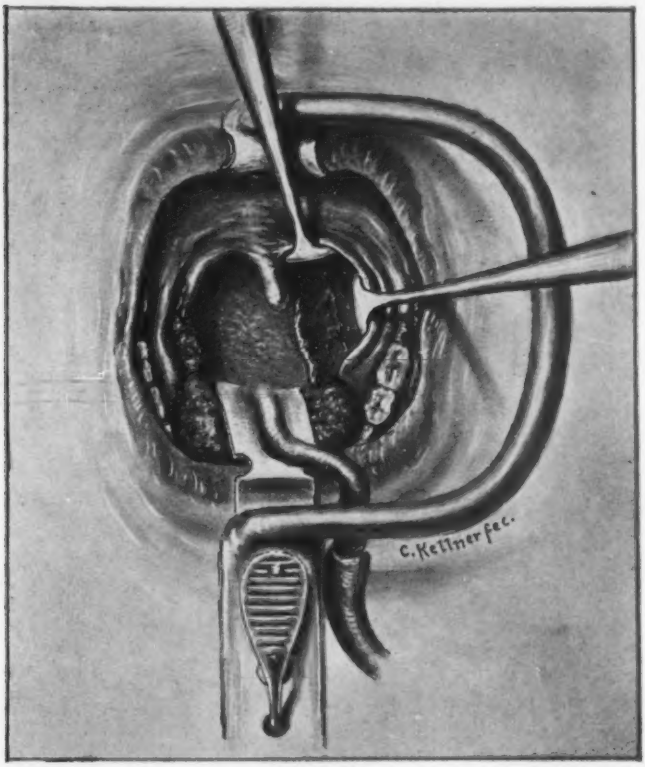
Fifth Step.

Fourth Step: The tonsil now being almost entirely freed, the snare (Beck-Schenck tonsillectotome modified by Dr. C. H. Borden) is applied to the base, and the tonsil removed.

Fifth Step: Sponge wet with adrenalin 1/1000 is introduced into sinus tonsillaris and firm pressure made for three or four minutes.

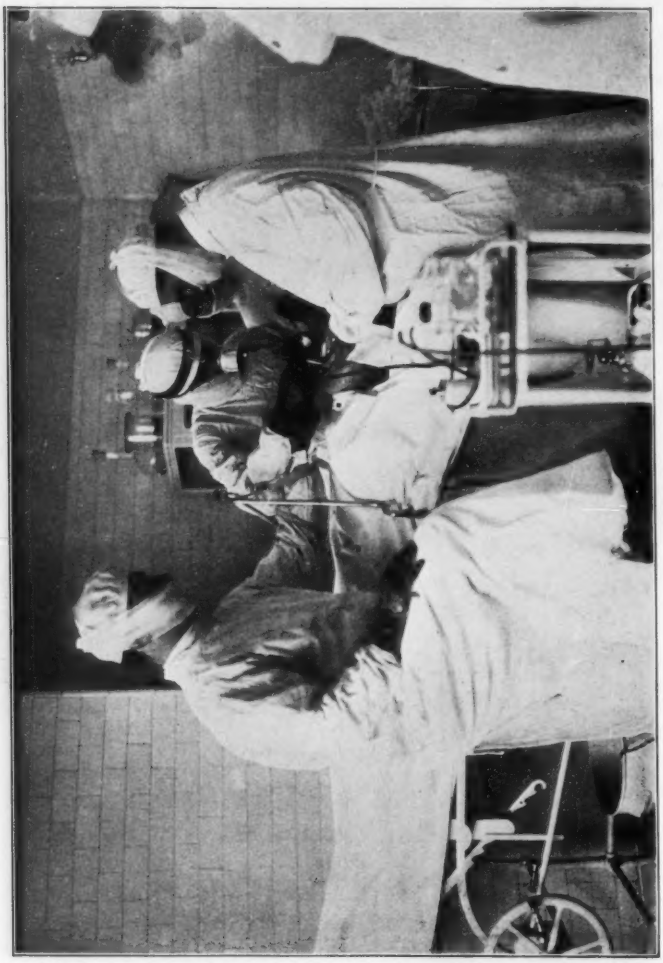
Sixth Step: Retraction of pillars and inspection of sinus tonsillaris for evidence of hemorrhage or remains of tonsil.

If the operation is done carefully, very little bleeding will be experienced, the pillars of the tonsil will not be injured, and after the throat becomes healed it will be perfectly normal in appearance and not in the slightest degree distorted. We have operated on the throats of a number of singers and in every case the voice has been improved by the operation.

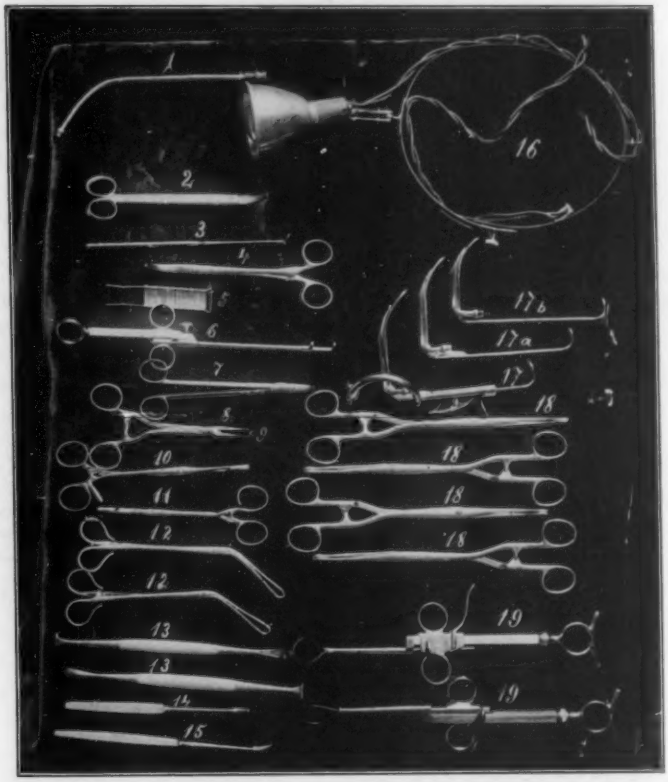


Sixth Step.

After Care: The throat should be kept clean with an alkaline mouth wash; sinus tonsillaris should be touched up with five per cent solution of silver nitrate p. r. n., until throat is healed, which usually takes from one to three weeks. Patient's general condition indicates length of stay necessary in hospital; the usual time is from one day to a week.



Set up for Operation.



INSTRUMENTS.

1. Metal tip for suction apparatus. (Designed by Dr. C. H. Borden). 2. Prince's tonsil scissors. 3. Needle for suturing pillars together. 4. Shallcross's double curved hemostatic forceps. 5. Michel's metal clamps. 6. Forceps for placing Michel's clamps. 7. Forceps for removing Michel's clamps. 8. Forceps for placing the Cushing-Crowe clamps. 9. Small silver clamps for bleeding points, Cushing-Crowe. 10. Schoemaher's artery forceps. 11. Beck's tonsil hemostat. 12. Tonsil forceps, originally made by Vaast, Paris. 13. Hurd pillar retractor. 14. Carter knife. 15. Abraham's tonsil knife. 16. Headlight. 17-b Small tongue depressor for ether gag. 17-a Medium tongue depressor for ether gag. 17. Davis-Crowe mouth gag, large tongue depressor. (Made by Charles Willms Surgical Instrument Company, Baltimore.) 18. Sponge forceps. 19. Tonsil snare. (Beck-Schenck tonsillectotome, modified by Dr. C. H. Borden.)

36 Pearl Street.

TWO CASES OF TIC DOULOUREUX OF SPHENOIDAL INFLAMMATORY ETIOLOGY.*

DR. GREENFIELD SLUDER, St. Louis.

I desire to outline briefly two cases of tic douloureux of sphenoidal acute inflammatory origin. The first was in a woman forty-one years of age, who had always enjoyed good health. She became afflicted October 15, 1912, with a sharp, stabbing, recurrent pain which ran through her upper jaw and around her eye backward under the zygoma, making earache, and from there backward and downward into the neck and shoulder. Movement of the head precipitated the pain. This is the distribution of pain that I described in 1908† which I believe to emanate from the sphenopalatine ganglion. Subsequent experience has borne out the correctness of that assumption.‡ Pain starting in the sphenopalatin ganglion, however, is, as a rule, of the neuralgic variety. By this I mean that it is of longer or shorter duration and of an aching nature rather than the frequent recurrent, stabbing pain described as tic douloureux.

Prior to the onset of this painful manifestation she had had a coryza which had infected the sphenoidal sinus of that side. Treatment of the sinus resulted in a cure of the inflammatory process and a cessation of the tic douloureux. The case lasted over a period of six months. She remained well for ten months, when the entire symptom-complex was re-established in lesser severity by another coryza and again yielded to treatment.

The second case was that in a man forty-four years of age who had always enjoyed good health. He presented a bilateral sphenoidal empyema, of much greater severity on the right side. Accompanying this, was stabbing, recurrent pain such as I have many times seen described as tic douloureux, limited sharply in its distribution to the second and third divisions of the fifth nerve. The treatment of the sphenoidal sinus resulted in a cure of the inflammatory suppurative process and a cessation of the tic douloureux. The painful manifestations of the case lasted eight months.

*Presented to the Washington University Medical School Society, St. Louis, October 13, 1913.

†The Role of the Sphenopalatine (or Meckel's) Ganglion in Nasal Headaches. (New York Medical Jour., May 23, 1908.)

‡Etiology, Diagnosis, Prognosis and Treatment of Sphenopalatine Ganglion Neuralgia. (Jour. A. M. A., Sept. 27, 1913, Part 2, Vol. LXI., pp. 1201-1205.)

I make you these two very brief reports because they seem to me, incontrovertibly, to establish the sphenoidal inflammation as the etiology of the tic douloureux. There are some statements in our literature, more or less at random, attributing the sinuses of the nose as the etiological factor of tic douloureux, but a record of such perfectly well-defined cases as these that I describe is unknown to me.

3542 Washington Avenue.

Dentigerous Cyst of Lower Jaw; Operation. WILLIAM MILLIGAN, Proc. Roy. Soc. Med., Laryngological Section, Vol. 8, No. 6, April, 1915.

Patient a boy, 15 years old, complaining of indefinite pain on right side of face. Six months before there had been progressive swelling on same side of face. Pain especially marked at night. Examination by x-ray showed the presence of an extensive cyst in the lower jaw, the bone being expanded to a thin shell. In the lower part of the cyst was a molar tooth. P. F.

Simple Method for Extracting Foreign Bodies in the Esophagus. E. FERREYRA, *Semana Medica*, V. 22, No. 23, June 10. 1915.

The apparatus required is a urethral gourd or catheter (No. 16 or 18), a mouth-gag and half a yard of No. 3 or 4 coarse silk. After inserting the gag, the catheter is thoroughly lubricated and passed gently into the esophagus three or four times. This mobilizes the foreign body, arrests the spasm and lubricates the passages. The silk is wound around the catheter about its lower third and with it is introduced gently into the esophagus. When the foreign body is passed the catheter is twisted until some resistance is encountered and then withdrawn, the patient's head being held, at the same time, bent forward. P. F.

SECONDARY HEMORRHAGE FOLLOWING POSTERIOR TIP OPERATION. DESCRIPTION OF SODIUM CITRATE METHOD OF BLOOD TRANSFUSION.*

DR. HAROLD HAYS, AND DR. RICHARD LEWISOHN, New York.

During the month of April, 1915, I was consulted by a young man of thirty who stated that for a few weeks he had had a distressing irritation in the throat, particularly on the left side.

Examination revealed an enlarged posterior tip of the inferior turbinate, which I told him it would be best to have removed. As I had removed his tonsils under general anesthesia two years before I hardly anticipated the following course of events.

There was no difficulty in removing the posterior tip which measured about one centimeter in length and breadth and a quarter of a centimeter in thickness. The parts had been well anesthetized with an infiltration anesthesia of cocain and adrenalin, and at the time of the operation there was practically no bleeding. The patient left the office in good condition.

About four o'clock that afternoon I was informed that he was bleeding quite profusely. I immediately went to see him and noted by his pallor and the poor quality of his pulse that the hemorrhage was more severe than usual in such cases. I removed the small packing of bismuth subnitrate gauze which I had put in at the time of the operation and washed out the nostril with a hot saline solution. This treatment stopped the bleeding.

Two days following, the patient was able to come to my office and he underwent treatment daily until the seventh day when at ten o'clock in the morning I was notified that he was bleeding profusely. I was able to get to him within a half hour. When I arrived he was almost exsanguinated. I immediately packed the nose anteriorly and put in a posterior plug. This procedure seemed to stop the bleeding very well. I again went to see him in the middle of the afternoon. I found him very much prostrated but with no evidence of bleeding, except some oozing. At that time I gave him a hypodermic injection of a quarter of a grain of morphine and also a saline of eight ounces per rectum. Later he received a hypodermic injection of a half grain of emetine hydro-

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, Oct. 27, 1915.

chloride. This was followed by a deep injection in the gluteal region of 20 c.c. of horse serum. That night his temperature rose to 104 degrees, pulse 130, respiration 26, due no doubt to the serum injection.

No further bleeding occurred but on the following night he complained of pain in his left ear. Examination showed a slightly congested drum. Temperature was 100.4 degrees. About four o'clock in the morning the drum must have ruptured spontaneously for there was a profuse discharge of serum when I saw him later.

During the next few days the discharge from the ear increased and changed to muco-pus. Definite tenderness and pain over the mastoid developed which seemed to increase until the whole mastoid region was involved. There was no sagging of the posterior wall. A culture of the pus showed a pneumococcus infection. Blood examination at this time showed a mild leucocytosis, 12000 white blood corpuscles with seventy per cent of polyneuclears. His emoglobin was down to fifty per cent.

On account of his general condition and because it was thought there might be a necessity for performing an operation on the mastoid, it was decided that a transfusion was advisable, and on Wednesday, May 12, a transfusion of 900 c.c. of citrated blood according to the method of Lewison was performed, as described below.

The patient's general condition improved considerably after the transfusion. The coagulation time before transfusion was seven minutes; after transfusion, five minutes. The ear still continued to discharge and the pain was severe but the temperature remained normal. Under the circumstances, it was deemed advisable to defer operation as long as possible. For the general condition, injections of sodium cacodylate were given at intervals of a few days.

Two days later, May 14, (a week after the previous bleeding) there began another profuse hemorrhage which lasted over twenty-four hours. The nose was again packed anteriorly but the posterior naris was left free. In the afternoon I gave the patient a deep injection of human serum. That evening I called Dr. Coakley in consultation. He inspected the part carefully and insufflated some powdered suprarenalin extract. The tissue extracts as prepared by Dr. Hess were also used. None of these remedies seemed to ameliorate the bleeding so it was necessary to do a second transfusion the following morning (May 15). After the transfusion,

the bleeding ceased. By this time the mastoid symptoms had considerably subsided.

The following afternoon a profuse hemorrhage again occurred and after packing the nose with no beneficial result, I called Dr. Yankauer in consultation. The packing was removed and for the first time the parts could be readily inspected. On former occasions I was unwilling to remove the packing for fear of further hemorrhage. Dr. Yankauer succeeded in placing two sutures around the raw area and then packed the nose with sterile gauze soaked in coagulin—a preparation which seems to have a great deal of merit in these cases. Whether the placing of the sutures or the application of the coagulin-gauze stopped the hemorrhage, I do not know but at all events, there was no more bleeding and when the gauze was removed at the end of four days, it was clean and free from fresh blood.

From this time on, the patient rapidly recovered. He developed an arthritis of his shoulder and wrist from the various sera injected but this left no permanent result. At the end of two weeks he was able to get about as usual.

The citrate method of blood transfusion is undoubtedly the simplest of all the different transfusion methods. Coagulation of the blood during the transfer from donor to recipient is absolutely and safely prevented by mixing the blood with sodium citrate. Citrate of soda has been the anticoagulant *par excellence* in laboratory work for many years. It was generally assumed that a one per cent mixture of blood and citrate of soda was necessary to prevent coagulation of the blood. As sodium citrate, however, is toxic when used in large quantities at the one per cent ratio, this drug could not be used in human blood transfusion. Experiments which I published about six months ago, showed, however, that the quantity of sodium citrate needed to prevent coagulation of the blood was much smaller than generally supposed (0.2 per cent instead of one per cent). Thus large amounts of citrated blood (for instance 1500 cubic centimeters) can be transfused without any danger to the recipient.

Blood mixed with sodium citrate at the rate of 2-1000 does not clot outside the body in two to three days. On the other hand, the citrated blood produces a shortening of the coagulation time in the recipient probably by an over-production of prothrombin in his blood. Citrated blood can be used with perfect safety in all cases of hemorrhages and hemorrhagic diseases (hemophilia, pur-

pura, etc.) The coagulation time again becomes normal in about twenty-four hours after the transfusion.

The technic is the following: A tourniquet is applied to the donor's arm and a vein punctured with a large size cannula. While the blood is running into a glass jar it is mixed with a 2 per cent sodium citrate solution at the rate of 1:10. For instance if we want to transfuse 500 cubic centimeters of blood we would mix it with 50 cubic centimeters of the 2 per cent citrate solution. We then introduce a cannula into the recipient's vein and with the aid of a salvarsan flask inject the donor's blood into the recipient's vein.

I have used this method in nearly 50 cases with perfect success, not only in adults but in little infants. The details of this new method (experiments, technic and clinical reports) were published in Surgery, Gynecology and Obstetrics, July, 1915.

The advantages of this method are:

1. Utmost simplicity of the technic.

2. No connection between donor and recipient. In fact the blood can be collected in laboratory or office and then carried to the patient's bedside, as was done in the case described by Dr. Hays.

3. Easy application in emergency cases.

11 West 81st Street.

Two Cases of Otitic Extradural Abscess. FRASER, *Edin. Med. Jour.*, January, 1915.

The cases are of interest as showing the misleading nature of the symptoms which may arise in some examples of the condition. The first case presented features closely resembling those of septic thrombosis of the sigmoid sinus; while the second showed symptoms pointing to basal leptomeningitis such as stiffness of the neck. nig's and Babinski's signs, and increased tension of the cerebrospinal fluid with turbidity. "Senious meningitis" was probably present. Both cases recovered after operation. GUTHRIE.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

(*Continued from page 72.*)

A Tonsil Operation that Minimizes Hemorrhage. DR. ANTONIE P. VOISLAWSKY.

I want to emphasize that I claim originality only for the technique in this operation and not for any of the instruments in use.

The patient is anesthetised with gas-ether anesthesia until the secondary stage is reached, and draped for operation in the usual manner. Lying prone on the table, without a pillow, the Denhart, Jennings, Whitehead or Murdoch mouth gag (depending on the formation or condition of the teeth) is introduced, opening the mouth to its full capacity, and is held in place by the anesthetist; the chin slightly elevated to allow free breathing. The Titus suction tongue depressor is then introduced and the throat cleared of mucus. The advantage of this instrument is that it avoids injury to the mucous membranes and dispenses with unnecessary bleeding caused by the use of gauze or cotton sponges.

With the right hand, a Beck snare is introduced from the left angle of the mouth, the loop passing posterior to right tonsil. The tonsil is then forced through the loop, the catch is sprung and the snare wire drawn tight and locked. Two or three turns of the screw insure the engagement of the snare, which is now handed over to the assistant. In like manner the left tonsil is forced through the loop of a second Beck instrument and engaged, the manipulation of the instrument being with the left hand. The assistant then gently raises the snares, thus approximating the tonsils in the median line; the operator applies a tenaculum to both tonsils at the same time. The assistant takes one instrument, the operator the other and slowly the tonsils are enucleated, the assistant removing the tenaculum holding both tonsils.

What little bleeding follows the operation is usually controlled by gentle pressure, by placing vaseline coated gauze pledgets, held on sponge sticks, between the pillars. Hemorrhage seldom occurs if this method is adhered to.

This operation has many advantages. Aside from the small quantity of blood lost there is no method that leaves so little traumatism; the uvula is never sacrificed or bruised and the pillars are left intact. Pain following the operation is minimized, the slough quickly disappears and healing occurs in a very few days, leaving perfect anterior and posterior pillars.

The line scar so frequently met with after tonsil operations, showing adhesion between the stylo-glossus and stylo-pharyngus muscles is never present.

The after treatment is of the simplest kind; children seldom stay with us longer than twenty-four hours and are dismissed with the admonition to gargle or wash their mouths with cold or warm water according to preference and advised to chew flavored gum for a few days, the two-fold object being to get rid of the unpleasant after taste of anesthesia of sloughing tissue and to exercise their jaws.

Dr. Arthur B. Eisenbrey, of St. Luke's Hospital, has worked on the photography for the past six months and finds it is almost impossible to get a lens that can take good pictures in the mouth.

The first picture shows the buried tonsils.

In the next I introduce the Sluder-Beck tonsillotomoe behind the left tonsil, thus raising it. The method is similar to the Sludder, with the exception that the Sluder cuts from before backward and the snare works forwards.

The third shows the tonsil engaged and thrown in the median line.

In the next picture both tonsils are engaged and brought to the median line.

The fifth shows both tonsils engaged and a tenaculum grasping them.

The next picture shows the enucleated tonsils being removed from the mouth.

The last picture presents the mouth after enucleation, the anterior and the posterior pillars are intact.

DISCUSSION.

DR. D. BRYSON DELAVAN: Notwithstanding the remarkably clean and instructive pictures just projected upon the screen, a visit to St. Luke's Hospital upon operating day would offer a much more practical demonstration. Dr. Voislawsky has worked out the technique of the operation with great ingenuity and care and in his hands its results have been very satisfactory.

DR. N. L. WILSON: The worst hemorrhage I ever saw followed the use of the snare. While it is theoretically the instrument of choice, practically it is no better than the tonsillitome.

DR. WILLIAM W. CARTER: One of the chief objections to the snare operation is that the tenaculum frequently pulls the tonsil out too far and in that case there is always a portion of the muscular tissue of the superior constrictor removed in addition to the capsule. It is, in the majority of cases, an extra-capsular operation. In a large number of tonsils removed with the snare by different operators, examined by Dr. Wright, it was found that practically all of them had varying amounts of muscular tissue on the outside of the capsule.

Personally I have abandoned the snare operation save in those cases where it is especially indicated.

I regard the Senden operation as being rapid, safe and efficient. The capsule is removed intact and there is a minimum of traumatism. In the thousand and more cases I have operated upon by this method I have never had a hemorrhage of sufficient moment to excite alarm or to prove detrimental to the prompt recovery of the patient.

DR. JOSEPH ABRAHAM: I must say I never had any severe post operation hemorrhage in the many cases of tonsillectomy I performed following a radical tonsillectomy. I prefer dissection and removal with the wire snare. Oozing from the wound I control by pressure, but for spurting arteries or bleeding veins I prefer, and in fact always ligate. First one tonsil is removed and when the field is free of bleeding I remove the other. In this manner the pillars, uvula, all neighboring parts are kept intact.

DR. RALPH OPDYKE: I have had a great many tonsil operations, sometimes twenty-five or thirty in a week. I use the finger enucleation method entirely. The tonsils come out en masse and is very rapidly done, in some instances in a minute. There is very little hemorrhage and no laceration. I loosen them quickly with the finger and then insert the snare, being careful to include only the tonsil in its capsule, the snare wire lying about it, the anterior and posterior pillar being pushed aside, and then setting the snare slowly and locking it. I have done as high as ten or eleven in an hour, and I have yet to be called in subsequently for hemorrhage in any case. The real trick in this method is to find the point of least resistance between tonsil and surrounding tissue and deftly and literally pop the tonsil out. In many cases, probably one out of three, no snare is required, and by dragging the tonsil forward, I let the sharpened points of the teeth ratchet off the tonsil roots. In this manner no instruments save a mouth gag and tonsil forceps are necessary, and in not a few cases not even these have been used.

DR. HAROLD M. HAYS: The most important thing to emphasize outside of Dr. Voislawsky's method is the question of suction in these cases. With the proper suction apparatus there is less tendency for wiping out the mouth or wiping the tonsils with rough gauze. In a number of cases where I had a proper anaesthetist there has been far less bleeding and I have had to use no form of sponge in the mouth. If you can get along without the use of a sponge it will help a great deal. The suction spatula is one of the cleverest things I have seen, and I think that if it had a yet smaller shank, with also a smaller tube, it would fit better in the mouth of a child.

DR. ANTOINE P. VOISLAWSKY: I may not have made this as clear as I wanted to, but I would say that when you take out a tonsil with a Sluder-Beck instrument that the gland is turned back on itself, the capsule on the inside. To see the tonsil as it was in its natural bed you have got to reverse it, as is done in other methods. The tonsil is absolutely blanched, there is no blood left in the gland and in reference to Dr. Carter's statement, there is no pillar tissue of any kind attached to it, at least not apparent to the naked eye. That is one of the strong points in favor of the Sluder-Beck. Of course I do not doubt but that some tissue shreds may be seen microscopically. In regard to oozing, you cannot have any wound where there is no oozing, but you do not get the bleeding that occurs with the Matthew, the MacKenzie and the snare operation. I tried the Sluder-Beck first, then used the Sluder and after that used the Sluder-Beck again. I recommend it as the ideal instrument In regard to arterial bleeding, it would not make a bit of difference if you took a minute or a half hour to enucleate the tonsil in a bleeder, I

presume you would get your hemorrhage the same as with other methods.

I do not use the suction to get rid of anything but the saliva and mucus in the mouth. I want a clear field to start with and the Titus suction depressor insures it for me. I also want to say that the trauma is very slight. There may be some particles of tissue adherent microscopically, but it is a pretty clean tonsil, and if you gentlemen will come to St. Luke's Hospital, as Dr. Delavan has suggested, we will show you the method.

Frontal and Maxillary Sinusitis and Sequelae Due to Staphylococcus Pyogenes Albus. DR. RALPH OPDYKE.

W. W., 18 years old, born in the United States, single. Parents living and in good health; one older brother and no sisters. The patient had had various serious ailments since childhood, among them being acute articular rheumatism followed by a mitral lesion and this had been aggravated by succeeding rheumatic attacks. Minor attacks of chronic pharyngitis and tonsilitis. On May 30, 1914, after dancing in his house and while still over-heated, he took home some of the houseparty in his open car, and as a result of this exposure caught a violent cold. On the following evening he was attacked with violent pain over his left eye, continuous and severe in character. Oculist found nothing abnormal as to his visionary fields. On the following noon (third day of attack) I was called and found the patient to be suffering from an acute virulent maxillary sinusitis. Temperature 104.8, pulse 118, respiration 18. He was thoroughly prostrated, nauseated, suffering great pain, extremities cold. On opening the antrum of Highmore with a trocar an abundant amount of pus drained off which proved to be a true culture of staphylococcus pyogenes albus. Antrum irrigated twice a day. Two days later severe attack of tonsillitis on left side, resulting in quinsy the following morning. Discharge very free after lancing.

An autogenous vaccine made from culture and given at five-day intervals seemed to have no appreciable effect in staying the obstinate and persistent course of the disease. Several days later there appeared a marked swelling on the left side of the neck, anterior to the sternocleido-mastoid muscle and twenty-four hours later the condition became so serious and the patient so prostrated that an external operation became necessary. Operated by Dr. Abbe; free incision and tubal drainage; a direct connection was found to exist between the tonsil and the sinus extending well forward also to the arytenoids.

Daily drainage, gargling and antrum irrigations. The patient improved and by June 6 he was able to be up an hour at a time and fairly free from pain, except hip pains, which were rather severe.

On June 28 the patient complained of severe left frontal headache. Left frontal sinus dilated and curetted. Repeat as occasion warranted, with prompt relief to the patient. Temperature continued around 100 to 200 degrees, pulse 110 to 124. On July 11 there appeared occipital headaches and insomnia, controlled only by morphin. On July 12 the left frontal sinus was again curetted and drained. Some relief from ice cap applications. On July 24 there were frequent attacks of nausea and several attacks of vomiting; character of material not especially

diagnostic. On July 28 after probing left frontal sinus I removed a large piece of necrotic bone from the left nostril, which proved to be the major part of the anterior turbinate bone that had gradually sloughed off.

On July 31 I received a hasty summons to the patient and found him complaining of cramps in his right leg; temperature 104.4, and he shortly afterwards passed into a convulsion, epileptic in character. Unconsciousness complete, pupils dilated, color decidedly bad, frothing at the mouth and violent clonic contractions in his right limb. Lumbar puncture negative. After heroic treatment the patient regained consciousness. Four hours later recurrence of the attack with all the earlier symptoms greatly exaggerated. Temperature 105, pulse hardly perceptible, contractures most exaggerated, extremities icy cold, neck muscles rigid with head to right, eyes widely dilated, double lateral nystagmus pointing to the left and absolute unconsciousness. As a last resort I suggested an immediate decompression and within forty-five minutes he was under the knife. About three drams of a sero-purulent fluid aspirated from fourth ventricle contining a pure culture of staphylococcus pyogenes albus.

Patient regained consciousness the following morning. No return of convulsions. Temperature continued at 104.

On August 9, violent frontal pains started out of a clear sky and the patient suddenly had a relapse and a second decompression was deemed necessary and was done. The dura was cut crucially and the hemisphere again explored with a negative result except that some fluid was again aspirated from the floor of the fourth ventricle (only about thirty minims). The patient rallied nicely and four days later his temperature and pulse had become nearly normal.

On August 14, violent frontal pains recurred and an immediate double radical frontal operation was insisted upon and consented to. Findings were as follows: Right frontal sinus noticeably small above its nasal opening, surrounding bones extremely eburnated, mucous membrane slightly necrotic. Left frontal sinus enormous in size, filled with necrotic detritus and of foul odor. Left sinus was thoroughly curetted, the nasal opening enlarged and the skin sutured with fine silk with perfect primary union and no visible cicatrix.

In twenty-four hours the temperature dropped to normal. Convalescence was rapid and uneventful except that in March, 1915, the patient had another attack of quinsy on the left side and it looked as though the above history might be repeated.

Meeting of November 16, 1915.

Case of Nasal Fibroma. DR. HARMON SMITH.

This case was presented to the Section last January, about two years ago. A growth in the naso-pharynx of this boy of 19 invaded the post nasal space, making respiration difficult. At the General Memorial Hos-

pital it was thought the growth was sarcoma, but the microscopical evidence was not complete. At the Manhattan Eye, Ear and Throat Hospital the fribroma was removed in October, 1914, and bled so extensively that it was necessary to pack the naso-pharynx. When the packing was removed an infection developed in the ear necessitating a mastoid and later resection of the jugular. Evidences of return of the growth shortly appeared in the naso-pharynx and Dr. White operated a second time, in January, 1915. Injections of monochloracetic acid and trichloracetic acid into the stump resulted in diminution in its size for a while, but returned again with evidence of a greater blood supply than ever before. With the increase of the growth the right external carotid was tied, and that arrested it in the naso-pharynx, but the cheek has been invaded and there is at the present time an ulceration of the mucous membrane of the cheek next to the teeth. The left external carotid has also been tied, with further abatement of the growth in the naso-pharynx, but opinion is divided in regard to the control of the growth in the cheek. These growths when taken in hand early can usually be kept under control. A great many operations have been devised for the removal of these fibromata. These growths recur frequently and extensively, but occasionally a fibrosis may occur about the pedicle and shut off the blood supply, causing occasional atrophy of the tumor. A number of acids have been injected in this case, but the subsequent return has been so great that the prognosis in this young man is seriously doubtful.

Case 2. This case was also presented last January. It was a case of angiofibroma. An opinion was expressed at that time to the effect that the injection of monochloracetic acid might result in its disappearance, but this did not prove true. The tumor continued to grow, the palate was ultimately split and the greater part of the tumor removed and the stump injected with monochloracetic acid, and it is now under control. A few days after the patient left the hospital following the operation he swallowed some hard food and split the palate where the union was not firm.

DISCUSSION.

DR. W. W. CARTER said he did not see why a case of that kind should be considered benign. It is normal cell growth running riot and this is accepted as a definition of malignancy. Clinically, at least, it is a sarcoma, and it is probably so microscopically. Why should it be considered a benign growth? It is a rapidly growing tumor and it is invading the surrounding tissues. Dr. Carter said in regard to Dr. Forbes' case that in all probability that the sloughing had resulted from injury to the tropic nerves caused by the cocaine. He did not know if the pure crystals would give this result, which could only be proven by experimenting, but it had suddenly occurred to him that this was the cause of the painless and non-inflammatory sloughing in this case. It did not impress him as being a case of syphilis. There was not enough scar tissue. In regard to the correction of the deformity, it cannot be remedied at one operation. First the soft parts must be attended to. The alae must be unfolded and then after these have healed, bone and cartilage must be transplanted.

DR. SMITH, in closing, said that Dr. Carter was right that this particular case of fibroma should be considered malignant. If the growth is a sarcoma, what is to be done with it? In the General Memorial Hospital they used radium x-ray, and he had injected alcohol and adrenalin, as had been suggested by Dr. Freudenthal. Everything had been tried except electrolysis. If it is a malignant growth the hemorrhage with this method would be terrific and the slough extensive.

DR. WOLFF FREUDENTHAL said that he had seen cases like Dr. Smith's cured by one operation. On the other hand, there have been quite a number of cases reported that went down-hill rapidly after the first operation, so that some writers advise against any operation, especially if there is any hint at malignancy. Several men had treated these cases with adrenalin and alcohol injections and reported good results in some cases.

Case of Eosophageal Stenosis Due to Nitric Acid. DR. DUNCAN MACPHERSON.

This patient swallowed the acid on August 28th, 1915. He was sent to me at Dr. Smith's clinic on October 7th complaining of inability to swallow anything excepting liquids, and these with difficulty. Eosophagoscopy showed a small opening apparently about the size of a pin head situated in the granulating area located about on a level with the second rib. The two radiographs shown on the left indicate the size of the bismuth stream preliminary to dilatation and after six weeks treatment. You will notice that the bismuth is practically invisible in the first picture, while in the second it is about the size of a No. 12 French catheter. We are now passing dilators equivalent to about a No. 18. The stricture is about six inches long, being narrower at the two extremities than in the center.

DISCUSSION.

DR. FRANCIS W. WHITE said that unfortunately he was unable to present the patient this evening, for reasons that would appear later as quite obvious. The patient applied at the Manhattan Eye, Ear and Throat Hospital for treatment and was assigned to Dr. Harmon Smith's Clinic and later to the Speaker.

The patient had been suffering from soreness of the throat for three or five months, and at the time when the doctor first saw her, she was suffering from pain upon swallowing. There was decided swelling upon both sides of the neck, externally in the anterior triangles. They were quite hard, painful upon pressure, apparently no areas of fluctuation, about equal in size, and made their appearance about the same time. The redness was due to medicinal application. The pharyngeal examination revealed a greatly enlarged right tonsil and a swelling on the lateral posterior wall. It had all the appearances of a latero-retro-pharyngeal abscess. It was incised, but only a few drops of pus escaped. Even upon deeper and wider exploration no more pus could be found. Much dark, thick blood escaped, and this seemed to give decided relief. This procedure was repeated several times and both tonsillar and retro-pharyngeal conditions improved. It had no effect upon the external swellings, which gradually increased in size. Their peculiar appearance gave rise to a great diversity of opinion regarding their identity. The patient

was admitted to the ward September 22nd on account of these swellings and the fact that the husky voice did not clear up entirely. On October 2nd under local anesthesia a regular adenectomy incision along the anterior border of the sterno-cleido mastoid muscle was made. All tissues below this muscle were simply matted into an interminable mass. Finally by breaking down a particularly strong barrier, a material almost identical, microscopically, with that found in the sebacious cyst was expressed in considerable quantity. All palpable glands were removed. October 5th the left side was operated on and almost identical conditions found. The first or second of November the patient complained of increased difficulty in swallowing and more pain, the voice became more husky and it could be seen that the right arytenoid was not moving as freely. There was some ulceration about the laryngo-pharynx. On the fifth of November the right arytenoid was immovable, and as the patient was not taking any nourishment at all, feeding by means of the nasal tube was instituted. The patient gained rapidly, the ulceration was lessening and the voice clearing up decidedly. The doctor saw her Friday, November 12th, for the last time and her throat looked the best it had during the course of her illness and she gladly consented to come here this evening. Saturday about 6 o'clock a sudden and violent hemorrhage occurred from within the throat, the loss of blood being over a quart. Under appropriate treatment she rallied, but Sunday about 2 P. M. another hemorrhage occurred, the patient dying within fifteen or twenty minutes. Dr. Law and Dr. Dwyer will demonstrate the x-ray plates and describe the post-mortem findings.

Dr. J. G. Dwyer, in discussing Dr. White's case, said that it was one of the most interesting that had come under his notice in a long time. The diagnosis lay between tubercular adenitis, sarcoma, Hodgkin's disease and simple purulent adenitis. Sarcoma and Hodgkin's were ruled out practically by the course the disease took. When the glands were incised they appeared tuberculous. The speaker was present during the first hemorrhage, and the patient must have lost a quart of blood. This hemorrhage ceased suddenly and the explanation was found at autopsy. At autopsy, a large purulent gland was found that was discharging pus into the throat, just above the larynx, and in the outer wall of this gland was a large blood vessel, apparently a branch of the facial artery that had burst—the first hemorrhage ceased probably because of rapid clotting of blood in the glands. This gland belonged to the innermost cervical group of glands and was situated just external to the constrictor and wall of the larynx. His diagnosis was a low grade sepsis in a patient that had no resistance, normal blood count, normal temperature—in fact no clinical guides at all. He was of the opinion that surgical measures would not have saved the patient, on account of the deep location of the gland.

Dr. Frederick M. Law: The plates show no abscess cavities. There are a few spots of pus in the region of the glands at the site of operation in the neck. The cervical vertabrae are hazy and it is possible there is an involvement here, but a second examination to confirm this was prevented by the death of the patient. Examination of the chest was negative.

Case for Treatment. DR. H. H. FORBES.

Patient a woman of 32 years old. Five years ago, one-half or two-thirds of the septum sloughed away painlessly and within four months left present condition, no septum and very little nose. The doctor asked for suggestions along the line of treatment. It was thought that the condition was the result of lues, but a negative history is given and the Wassermann reaction is persistently negative. The sloughing has taken place in cartilage rather than in bony structures. The patient gives a very interesting history of having had the habit of rubbing cocaine crystals for seven or eight years previous to the onset of the sloughing. She usually rubbed the crystals into the septum of the nose. Can this be the result of an atropic disturbance caused by the rubbing of the cocaine crystals and thus causing a vaso-motor stasis with painless slough. (Dr. O. Dwyer has since spoken of case in his practice). Dr. Forbes said that he had thought of doing the operation in three stages. In the first stage a transverse incision about the lower third of the nasal bones, going across from one side of the nose to the other and raising a flap from either side of the cheek. This first primary incision across the nose will allow dropping of the tip of the nose. The second stage consists in splitting the nasal tip, freeing the alae and making a presentable nose which will have absence of septral ridge. In the third stage the doctor said he would turn in the parts from under the lips and turn up bony flaps from the floor of the nose and bring the parts up into position and have them act as a normal septum.

DISCUSSION.

DR. L. M. HURD thought that cocaine could not cause this extensive ulceration, with disappearance of the lateral cartilages and parts of the skin. The doctor said he had seen a case that very day which had had extensive painless sloughing seven years ago, with no perceptible scar tissue. There was no doubt in his mind that it was a case of syphilis.

DR. EMIL MAYER, speaking of Dr. Forbes' case, said that he would like to have Wassermann reaction taken after provocative injection. There is no use in taking repeated Wassermann unless you start something. The speaker said he had never seen so much destruction except in cases of syphilis. There are no other etiological factors that can cause it.

A fine cosmetic result can be obtained by an external operation. The interesting thing about this case is that we may have to deal here with a case of late hereditary syphilis. He had seen cases of syphilis in the third generation, where the father had been free from syphilis but the grandfather had had it. In this woman of thirty-two, hereditary syphilis may readily be the cause.

Straight Direct Laryngoscopy, Bronchoscopy and Esophagoscopy. DR. R. H. JOHNSTON, Baltimore, Md.

DISCUSSION.

DR. MAYER said that Dr. Johnson had called attention to this method of straight direct Laryngoscopy on other occasions. He recalled the time when the doctor had spoken before the American Academy of Ophthalmology and Oto-Laryngology on this subject. It was hard to

see at that time that an examination could be made so easily with the head flat. The speaker was so interested that he went down to Baltimore to see Dr. Johnston apply this method and he was glad to see a personal demonstration which was worth more than any amount of talking about the method. He has done bronchoscopies since that time with the patient's head flat on the table. He recalled an interesting case at the Brooklyn Hospital where the patient had inhaled the crown of a tooth and the first stage of the bronchoscopy was made with the head flat on the table and later the head was slightly extended over the table. The danger in these cases occurs when the foreign object is being drawn out of the larynx, because that is the time when the object is most easily dropped back. The speaker has in every case an assistant ready to grasp the object with a slender pair of forceps as it leaves the larynx. He is confident that in this case at the Brooklyn Hospital this manipulation saved a lot of trouble. He believes that the position is excellent in case of foreign objects in the esophagus. It is the peculiarity of objects in the esophagus that instrument after instrument is passed without seeing the object. Dr. Wilson will recall the tooth plate that slipped down. We made a number of examinations and could not find it. This was due to faulty position. An external operation was more successful. It is true that to Dr. Kilian belongs the credit of the bronchoscopic method, but when the whole history of bronchoscopy is written the names of Drs. Chevalier Jackson and Richard H. Johnston will not be forgotten for their share in the practical development of this life saving method.

DR. JOHNSTON said there was not much to add. He had started on this method by accident. He tried to operate on a child in the extended method and he thought he would try it with the head flexed and extended. To his astonishment, bronchoscopy with the head flexed was easier than with the head extended. Then he developed the method and it has worked well ever since.

Early Diagnosis of Gas-Phlegmons by X-ray. LUDWIG FINCKH, *Deut. med. Woch.*, May 1, 1915.

In a series of cases in the present European war, Finckh became convinced that in the milder type of the disease where there is abscess formation about a foreign body with subsequent gas formation, without, however, any symptoms or physical signs pointing to the nature of the condition, the x-ray may be the earliest guide in the detection of gas formation (a well-defined zone of air bubbles).

P. F.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY,

(*Dr. Sluder's Discussion continued from page 80.*)

His ideas concerning the pillar and the plica are gained from the work of Dr. George Fetterolf on the "Anatomy of the Tonsil and Its Capsule," published in the American Journal of Medical Sciences, in 1912. Fetterolf's conception is that the plica tonsillaris is a fold of the capsule of the tonsil pushed inward over the tonsillar mass, carrying a layer of mucous membrane with it and that the pillar proper is constituted by the palletoglossus muscle. In other words, the statement made in the speaker's paper of 1910 was a confusion in the nomenclature.

DR. WISHART said he had not met with any continued paralysis of the soft palate after operation, and he had used the finger very largely, never, however, while the patient was retching. He always saw to it that the patient was in the proper condition of anesthesia before he attempted to remove adenoids. He would rather give a little more anesthetic than to run the risk of over-stretching the soft palate. Many of the bad after-effects were caused by too much sponging. The assistant should stand in the right position with reference to the patient, so that he could see the parts, and the sponge should never be turned round. He had merely cited Dr. Makuen's article and had presented these cases as notes upon it, not as a criticism.

DR. ROY, in closing the discussion, said it had seemed to him important to bring the subject before the Society, inasmuch as he had never heard of anyone, in the literature or otherwise, who had encountered a case of this kind, and that in writing to members of the profession, he had found it much more common than he had imagined. He did not want to go into the matter of technic, or to advocate this or that method; he did say, however, that one should not change from a well recognized technic, which one had used and knew how to use successfully, to a new method. In the majority of cases the operation was performed too hurriedly, often without stopping or waiting for the oozing, which frequently occurred, to cease, and without seeing just where the instrument was going. The correction of these errors in technic would lessen the number of traumatic and unsatisfactory after-results. He had never employed a suction apparatus, which, it seemed to him, sucked the blood out of the arterioles and veins and tended to keep up the bleeding. He operated slowly in doing tonsillectomy, and had very few drops of blood. A sponge put into the cavity and allowed to remain for a while would prevent bleeding. If, as Dr. Stucky had suggested, the operation were considered a major operation, always to be performed in a hospital, and if the operator were always careful to see the entire field and to know just where his instrument is going, better results would be obtained than had been previously accomplished.

Some Investigations of the Salivary Glands in Health and Disease.

DR. THOMAS E. CARMODY, Denver.

There is notable lack of literature on this subject, due to the rarity with which the salivary glands are affected, or to the fact that cases are not considered by observers as a sufficient interest to be reported.

Among pathological conditions mentioned by the author as involving the salivary glands or ducts were: Calculus; injury to or stoppage of ducts by mucus plugs, constriction, or cicatricial bands; Miculicz's disease; tuberculosis; air tumors; new growths; chronic hypertrophy; atrophy; and congenital defects.

Mistakes in diagnosis of these conditions seemed to be the rule, probably due to the infrequency of most of them.

Was there any reason why the salivary glands are so free from disease? It had been suggested that these structures are more frequently affected in persons who are careless about their teeth, though this view could not be substantiated. A badly decayed tooth, however, was frequently found opposite the opening of Steno's duct in cases of disease of this duct or of the parotid gland. The rich blood supply of the tissues about the mouth could not explain the special immunity of the salivary glands; nor could the good drainage, which characterizes the parotid, especially the superior portion, account for this relative immunity, because the submaxillary and sublingual are not so advantageously situated.

Although a good deal of work had been done to determine the protective action of the sulfocyanate of potassium, nothing had been definitely determined in this regard.

The continuous flow of secretion from the glands probably had as much to do as anything in preventing infection, but it must be remembered that in case of the kidney one would expect, on account of gravity, that there would be small chance of infection taking place by way of the ureter, and yet the kidney was probably more frequently involved than the salivary glands; in tuberculosis, for example, the kidney is affected twenty-five times to one of the salivary group.

The thought presented itself that the glands and tissues might be among the last to lose their vitality, a view which the author believed to be true. It had been his observation from a limited investigation with glands obtained post mortem that patients who were very ill with various diseases digested starch at ordinary room temperature and at 40 degrees as well as the control of presumably normal saliva. The starch test, while the best at hand, left much to be desired. This test is made with a one per cent paste, made by heating the required amount of starch with a little water, and adding enough water to make a one per cent solution. Of this solution the tubes are taken containing five c. c. each, and one drop of filtered saliva is added at intervals of one minute, one drop of a N-20 iodine solution is added and changes noted. The first few tubes show blue, gradually becoming lighter until, at the end of ten minutes, a straw color was given. The blue color was due to the reaction of the starch to iodine, the gradual change to reddish is for the reason that the starch is changed to erythrodextrin, which gives a red color, and on further digestion achrodextrin is found, which gives no color. This, however, will not be found for at least twenty

minutes at ordinary room temperature, unless a large amount of saliva is added. If tested at forty degrees the change takes place more rapidly. No quantitative tests for soluble sulfocyanate have as yet been made.

The author reported fifteen cases of disease and injury to the salivary glands.

A Review of Recent Progress in Otology. DR. GEORGE L. RICHARDS.
(*Published in the January, 1916, issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. FRANK ALLPORT, Chicago, said the radical mastoid operation, which was a serious procedure, should not be undertaken without careful consideration. The spoken and written contributions to the subject during the past two years had tended to mitigate the enthusiasm of a good many mastoid performers, himself among the number. All other means should be tried before resorting to operation. Even in the most skillful hands the operation was not always successful. Nevertheless, he wished still to go on record as holding that, if something must be done, if all other measures of a conservative nature have been exhausted, if the point has been reached where some surgical procedure must be recommended, nothing had been proposed which would take the place of the properly performed, old fashioned, radical mastoid operation. The conservative method, as advocated by Heath and others, had very few enthusiastic followers, especially in this country. He had been surprised to read, in a paper by Haskin, the statement, which Dr. Richards quoted, to the effect that the author had not performed a radical mastoid operation on a private patient for some time. He could not understand how a man who sees a great variety of cases could arrive at this conclusion. In dispensary practice, where patients could not be given the care that private patients receive, it was necessary to perform the radical mastoid operation, according to Dr. Haskin, who claimed that by means of his vacuum cleaner he could obviate the necessity of doing the radical mastoid operation. There seemed to be some divergence of opinion as to what should be done with the Eustachian tube in the radical mastoid operation. So far as he was concerned there seemed to be but one way, and he paid a good deal of attention to the closing of the tube. Kyle, of Los Angeles, in a recent article, advocated paying no attention to the Eustachian tube. A case might be perfectly well in every other respect, but if there is a constant dripping from the Eustachian tube it was certainly not cured so far as the patient was concerned. If the Eustachian tube was left untouched, the patient would still go through life with a discharge. He thought, therefore, that strict attention should be paid to the closure of the mouth of the tube, by the Yankauer or any other efficient method.

DR. THOMAS J. GALLAHER, Denver, Colo., considered Dr. Yankauer's contribution to the treatment of the Eustachian tube both in the chronic suppuration and in stenosis of great value. In the radical mastoid he had found this method very satisfactory. In many cases of chronic suppuration the closure of the tube would prevent a mastoid operation. However, it was not intended to take the place of the mastoid operation when the indications were clear for such procedure. He had found Yankauer's method extremely gratifying in stenosis of the tube,

using, of course, the special instruments devised by him. In routine work the caliber of the tube should be known, and he had long since discarded the Toynbe tube with inflation to ascertain this fact. Even in cases of combined internal ear disease and tubal obstruction the tube should be made as patent as possible, which often improved the hearing although the internal ear condition remained uninfluenced. In cases of chronic perforation often this could be closed if proper drainage is established.

Dr. E. B. Dench, New York City, referring to the question of bacteremia in sinus thrombosis, called attention to the point, not mentioned by the essayist, that in a certain stage of sinus thrombosis one should not expect to find bacteremia. In the development of this condition there was first the formation of the parietal clot. At first there was bacteremia; suddenly there was none, but the temperature continued. That meant that the clot formation was continuing. After two or three days the blood was again filled with bacteria; that meant that the clot was breaking down. He cited a case in which the sinus was accidentally wounded. He expected to find bacteremia and had blood cultures made from the second day. At first there was no bacteremia, but after eight days there was. It was not until the clot broke down that the bacteria were found in the blood. In closing the Eustachian tube he had found it advantageous, after curetting, to so place the skin graft that it laps over the anterior wall of the canal, then to force the graft down into the tube. When the tube was left open, instead of having dermatization of the tympanic cavity there was proliferation of mucous membrane. Another plan which he had tried last winter was the use of a piece of bone, shaped with the rongeur forceps.

At the request of Dr. Richards, Dr. Dench demonstrated the method of skin grafting which he had presented before the American Otological Society at its recent meeting.

Dr. J. A. Stucky, Lexington, Ky., emphasized the importance of a careful examination of the ear in every case in which salvarsan is to be administered. In his two cases, to which Dr. Richards referred, complete deafness in the ear previously affected with chronic suppuration followed the use of salvarsan. He had had more trouble with the Eustachian tube than with any other part of the radical mastoid operation. He had had unsatisfactory results unless he managed to close the tube. The method he employed was that described by Dr. Dench, plus the use of the Yankauer curet.

Dr. Wendell C. Phillips, New York City, thought a paper like that of Dr. Richards important, especially as it gave an opportunity for clearing up the records. It emphasized, too, the importance of being careful in making statements, an illustration of which called him to his feet. The members of the Society must give Dr. Haskin credit for some very valuable work with reference to the vaccines, and for his radical mastoid work. It was unfortunate, however, that Dr. Haskin should have made the statement, in the contribution to which Dr. Allport referred, that he had not done a radical mastoid operation on a private patient in four years. That statement should have been qualified by mentioning the fact that he had had no cases of chronic middle ear suppuration with

symptoms of meningeal or labyrinthine complications. The speaker did not believe Dr. Haskin meant to convey the idea that he would not do a radical mastoid operation in such cases. In the presence of distinct evidence of extensive cholesteatoma no other treatment than the radical mastoid operation was indicated. These were the dangerous cases. As he looked back over his cases for the last few years he could not recall a single case of fistula where he did not find cholesteatoma. Such cases could be classed as suitable for no other treatment than radical mastoid operation.

DR. RICHARDS, in closing the discussion, said if those who thought they would get rid of cholesteatoma, when present, in every case of radical mastoid operation, would study the pathological anatomy of cholesteatoma of the temporal bone they would be convinced that in many cases the cholesteatoma had penetrated many cells of the bone which could not be removed without destroying the life of the bone or of the patient.

Brain Abscess of Otitic Origin with the Report of Five Cases. DR. JOHN W. MURPHY, Cincinnati.

(*Published in the October, 1915, issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. NORVELL H. PIERCE, Chicago, took issue with Dr. Eagleton in the matter of operating through a large opening in both skin and bone in infected areas. He had witnessed bad results from extension to the brain. He had never seen any reason for these large bone flaps in operating upon the brain. He had always attempted, in both cerebral and cerebellar abscesses, to operate through a small incision. He classified brain abscesses as those which occasionally recover, and those which never recover. The abscesses which occasionally recovered were those in which a so-called stalk of the abscess could be followed, in which this fistulous, necrotic pathway of infection could be followed up to the brain cavity. Perhaps the majority of such cases would recover. In transportation abscesses, where the infected material was transported through the veins or otherwise to the brain from the suppurating focus in the mastoid, where no pathway could be found, and where one blindly stabbed into the brain, failure to recover was the inevitable rule. One either missed the abscess, or even if it were found, there was such an encephalitis or meningitis from going through or infecting the arachnoid spaces, that recovery was impossible. It was difficult to thoroughly explore the wound in the mastoid in those abscesses situated at a distance from the original area of infection. If, therefore, he could not follow the stalk into the abscess he took away a button of bone. He never laid back a flap. He thought it a very bad practice to explore through an infected area. It was a good plan to endeavor to form a plastic inflammation, before going through with an exploratory instrument by packing the subdural space.

DR. WENDELL C. PHILLIPS, New York City, congratulated Dr. Murphy upon having the privilege of treating so many cases of brain abscess in so short a time, also upon his large precentage of recoveries. Most of the symptoms, or so-called symptoms, of brain abscess were not symptoms which came on later, or after the general meningeal symptoms had

appeared. Unfortunately, cases of encysted brain abscess presented very few symptoms until rupture of the abscess walls had taken place. Unilateral headache was the one symptom he had always found to be present. He had become suspicious of a severe and persistent unilateral headache in cases of chronic middle ear suppuration. In many cases it was not severe enough for one to obtain a definite clinical history. He had had a few cases that had impressed him so forcibly that he had come to look upon this type of headache as a symptom of brain abscess. One of these was a young and otherwise healthy student, who weighed 180 pounds. He had chronic suppuration of the middle ear, with an excessive discharge. This discharge was so excessive and so foul that the patient wanted some kind of an operation for it. He did the radical mastoid operation without eliciting the symptom of headache. At the time of operation it was found that there was a dehiscence in the attic, and a few drops of pus oozed from a pin-hole opening in the dura. A large encapsulated abscess was found. On questioning the patient later it was learned that whenever he studied very hard he had severe headache on that side. Another case was one of cholesteatoma with fistula of the horizontal canal. That man complained of incessant headache, but had no other symptom. He was seen by several confreres, including neurologists, but no other symptom could be elicited. Later operation revealed brain abscess. He asked Dr. Murphy what he understood by "large quantity" of pus.

Dr. John F. Barnhill, Indianapolis, Ind., agreed with Dr. Phillips. There were undoubtedly cases in which it was impossible to make a diagnosis of brain abscess, and these were cases in which there had been suppurative otitis media. The unilateral headache was not present all the time, but appeared some time during the twenty-four hours. Headache was a symptom of nearly every class of brain disease, especially of brain tumor, and it was very difficult to differentiate between brain abscess and brain tumor in which otorrhea had ceased. There were also the mixed-symptom cases, in which there was considerable localized meningitis along with the symptoms of brain abscess. He had seen a case very recently in which the pulse was 55, the temperature 104 degrees, and in which the type of headache described by Dr. Phillips was present in all its intensity. There had been projectile vomiting—all the symptoms, in short, usually associated with brain abscess. He counted the father's pulse and found it only 59. Slow pulse was probably a family characteristic in this case. He agreed with Dr. Eagleton in the matter of turning down a large bone flap, in order to make a more accurate diagnosis and more thorough evacuation.

Dr. Frank R. Spencer, Boulder, Colo., said nystagmus, in cases of temporosphenoidal abscess, might be absent, as in one of Dr. Murphy's cases, it might come before projectile vomiting, and it might change suddenly. It might occur with the quick component to the right, and then change suddenly to the left. This had been emphasized by Ruttin and Neumann. He recalled a case which he and Dr. Murphy had seen, four years ago, in Ruttin's clinic. The patient, a young woman, had nystagmus which changed character twice while the patient was under observation in the clinic. The suddenness with which the quick com-

ponent changed from side to side was very characteristic of cerebellar abscess.

Dr. J. A. Stucky, Lexington, Ky., said the method of drainage which he had found most satisfactory was that of Sir Victor Horseley, by means of several strips of rubber tubing. Through this rubber tubing the abscess cavity could be irrigated. The use of gauze was conducive not only to the formation of granulations, but to the opening up of areas of infection. The tubing could be removed one piece at the time.

Dr. S. MacCuen Smith, Philadelphia, congratulated Dr. Murphy upon the facility with which he diagnosed and located the abscess formations. In fifty per cent of his own cases the abscesses were found postmortem. Brain localization was one of the most difficult and very often the most unsatisfactory subjects with which to deal, notwithstanding the recent advances in this line. He corroborated what Dr. Pierce had said with regard to making a large opening.

Dr. Arthur B. Duel, New York City, said his experience accorded with that of Dr. Pierce with regard to the classification of brain abscesses. Those cases in which he had found a "stalk" leading to the abscess cavity had invariably recovered. Where he had found a stalk of entrance he had done very little, except to open up the bone freely to give vent through the naturally made pipe. Perhaps nine out of ten cases of brain abscess reported as cured had been of this type. The unsuccessful cases had been those in which he had been unable to find a "stalk" of entrance. In a number of instances he had located and drained the abscess, but the patient had died from meningitis or encephalitis by extension of the infection. This type of brain abscess would be more successfully treated when otologists learned to employ the technic suggested by Dr. Eagleton, of turning down a large flap and observing the niceties of surgical technic. He emphasized the importance of avoiding puncturing the vessels, as the hemorrhage which would thus take place into normal brain tissue would cause encephalitis or meningitis.

Dr. George W. MacKenzie, Philadelphia, gathered that in many of the reported cases the abscess appeared to develop within a week or ten days after the mastoid operation. In view of the four stages through which an abscess had to pass in its development, he thought this too short a time. Referring to the use of a small knife, such as Dr. Murphy had suggested, he said one might strike the abscess and yet not get pus. He advocated a crucial incision in order to find the pus. It was enough, when the pus began to come faster and faster, to put on the artery clips and dilate the opening. He had known of cases successfully operated in which the patient lived three or four weeks and then died. It was not easy to put in the rubber tube and keep it in place, nor was it always easy to drain these cases as they should be drained. It had been suggested that a brain abscess should be treated as an abscess in any other part of the body; to do this it would be necessary to make a large opening, and curette the abscess cavity *very gently*. This would shorten the duration of an abscess. It was not always easy to locate an abscess. He cited a case in which he had recently been mistaken with reference to a temporosphenoidal abscess. The case in question was one that developed in the course of a labyrinth suppuration. Besides the general symptoms common to all brain abscess cases, the focalizing symptoms

seemed to point to the cerebellum. Upon incising the cerebellum rather freely no pus could be found. It was then decided to open the temporosphenoidal lobe, when a large abscess was found and drained. An interesting finding in the case was the presence of a horizontal, wide-excursioned nystagmus to the side operated that was not present before the operation. In fact, prior to the operation the patient had a short-excursioned rotary nystagmus to the same side. This horizontal nystagmus following the operation must have resulted from the incision made in the cerebellum, and corroborates the claim of Alexander and the speaker that irritation in the cerebellum produces horizontal wide-excursion nystagmus to the same side, in contradistinction to the rotary short-excursion nystagmus found in labyrinthine affections.

Dr. E. B. Dench, New York City, thought a bone flap absolutely contraindicated. A brain abscess must be explored through the stalk; failure to find anything could then be followed by making a flap. An ordinary curved director was better than a knife. He had devised a director in quarter inches, which could be carefully introduced until a free flow of pus was obtained. He then inserted a cigarette drain of gauze, which could be left in place for twenty-four or forty-eight hours, and which would give all the drainage needed. This could be replaced, as the abscess cavity collapsed, with folded rubber tissue.

Dr. Smith added that drainage of a brain abscess should be through the avenue of infection. All his cases which had recovered had been drained in that way, whereas cases which he had evacuated through decompression had uniformly died.

Dr. Murphy, in closing the discussion, said he had seen two infections of the middle ear with temporoshpenoidal abscess. He had brought up this subject in order to emphasize the belief that running ears were more often the cause of brain abscess than had been thought.

A Report of a Collective Investigation on the Curettement of the Eustachian Tube in Chronic Aural Suppuration. Dr. Sidney Yankauer, New York City.

(*Published in the October, 1915, issue of* The Laryngoscope.)

DISCUSSION.

Dr. Francis P. Emerson, Boston, Mass., congratulated Dr. Yankauer on having devised an effective instrument for clearing out the Eustachian tube. He was in accord with Dr. Yankauer's views concerning the pathology of the Eustachian tube, and with reference to the importance of stopping the reinfection from the tube, His experience, however, and the statistics which he had gathered from other operators at the Massachusetts Eye and Ear Infirmary, did not conform to the essayist's ideas concerning the permanency of the closure of the tube. In the condition to be dealt with there was a funnel-shaped cavity which was already infected, in which the lining membrane might be absent, and in which necrosis of the bony element might be present. The endothelial elements were of lowered vitality. Healing must take place either through granulation or through cicatrization. If there was healing through granulation there would first be inflammation and reaction. During this stage the tube was closed down. But if statistics were to be of value as to the permanency of the healing of such a tube they must be taken two or three years after the operation. In order to try out this method he and Dr. Mosher had turned over all their cases to one of

the assistant surgeons, Dr. Lougee, and his results were embodied in a paper read before this Society in Atlantic City, last year. Out of twenty-five cases examined it was found that the tubes were open, with discharge and granulations, in eleven cases; tubes closed, with ear discharging, in one case; tubes open, with ears dry, in eight cases; tubes closed, with ear dry, in one case. There were four cases in which cholesteatomata were present. These should not be included. During the last month, in order to follow the matter a step further, the speaker went over the records of the Massachusetts Eye and Ear Infirmary, and of the cases which had been operated upon by different operators and in which no skin grafting had been done, only twelve reported for examination. Of these twelve cases only one tube was closed. This was a case in which Dr. Mosher had introduced into the lumen a piece of cartilage. Over this piece of cartilage there was a thin layer of epithelium.

DR. JOHN F. FAIRBAIRN, Buffalo, N. Y., had tried the method in four selected cases, shortly after the publication of Dr. Yankauer's paper, and after Dr. Yankauer had demonstrated the method to him. He said selected cases advisedly, because he did not believe the procedure would be effective in the presence of a pathological condition in the attic, antrum or of the ossicles, but absolutely indicated in tubal suppuration. In three cases he succeeded in getting dry ears; in the fourth he got no result. The only difficulty encountered was the intense reaction which followed the operation. This reaction extended up over the promontory. He had since used Urbantschitsch's modification of the Yankauer instrument and method. This instrument was a rasp-like celluloid bougie. A small sized catheter was first passed through the extended canal to the aural opening of the tube, and through this the bougie was passed and the walls of the tube denuded. He had used this method successfully in five cases.

DR. YANKAUER, in closing the discussion, said he had been unsuccessful in obtaining a reply from Dr. Lougie to the circular letter which he had sent out. He was therefore glad that Dr. Emerson had referred to them. It is not correct to judge the operation by comparing cases in which the operation had been successfully performed with those in which it had been performed unsuccessfully. It had been shown by this investigation that in cases in which the tube was not closed after curettment, a larger percentage were improved in regard to the suppuration.

It was likely that if none of these cases of Lougie's had been curetted, not so many would have been cured. If all of them had been successfully curetted and the tube closed many more would have been cured.

Referring to Dr. Beck's remarks, he stated that it was necessary to remove the mucous membrane from the isthmus; because at this point there was an osteo-chondral synarthrosis, and at such a place, where cartilage meets bone, any irritation will cause thickening of bone and hence here a bony atresia might be produced. That temporary closure of the tube could be produced by swelling of the mucous membrane seemed quite possible, and in such cases the tube would reopen.

The instrument of Urbantschitsch, to which Dr. Fairbairn referred, was a roughened celluloid bougie, and was introduced into the tube through the Eustachian catheter, and was not intended to destroy the mucous membrane, but merely to set up an irritative inflammation.

The End-Results of the Radical Mastoid Operation. DR. S. MACCUEN SMITH, Philadelphia.

(*Published in the June, 1915, issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. ARTHUR B. DUEL, New York City, emphasized the fact that in chronic otorrhea requiring radical operation two distinct types of cases, offering two distinct problems, were encountered. In the first class of cases the life of the patient was in danger because of the surgical condition present; in the second type there was an annoying discharge which repeated efforts had failed to cure. The end-results in these two types of cases were naturally different. The statistics which had formulated as to the length of time of healing had been confused with regard to these two types. Those who claimed that their radical cases healed in from five to six weeks had operated in a class of cases in which the surgical condition consisted in a mass of granulations, without necrosis in the bone, and an annoying discharge. The cases which necessitated radical operation for the other condition, required, in his experience, a longer time for healing:—usually from eight to ten weeks, and, in many cases, six months to a year. He would never consider a case in which cholesteatoma was present as healed until at least two years had elapsed without recurrence. The patient, in an uncomplicated case, could be considered out of danger as soon as the operation had been performed. In the cholesteatoma cases the patient was in some danger, though infinitely less after operation, until recovery was complete. For a long time he endeavored to skin graft all his cases, but in his experience had found it better to do the skin grafting in the third week after the operation, that is, after the cavity had been covered over with granulations. He thought it much safer surgery to leave out the primary skin graft in all cases. In cases in which exposed dura over the middle fossa or sinus was perfectly healthy it might be considered safe to cover immediately with a skin graft; but who could be certain, in suppurating wound, that he was not bottling up virulent organisms? In many cases it was necessary to expose large portions of dura which were covered with a mass of suppurating granulations. One could hardly doubt in such cases that there was great danger in covering this immediately with skin graft, lest the organisms present set up an active inflammation either in the exposed dura over the middle fossa or sinus. Even allowing that antiseptics strong enough to sterilize these areas were used, they would at the same time render the granulations unfit for receiving skin grafts.

DR. E. B. DENCH, New York City, referring to the effect of chronic purulent otitis media upon the general health, cited two cases in which there had been marked improvement in the general health following the radical mastoid operation. One patient had gained nine pounds in two weeks. This chronic aural suppuration produced a low-grade toxemia, and it was often difficult to determine just what was the matter with the patient thus affected. The patient who gained nine pounds was supposed by the family physician to have malaria. As to the effects of the radical operation on the hearing, he was glad to see that Dr. Smith's statistics tallied with those which the speaker had presented at the Otological Congress at Bordeaux. If hearing was very poor, and

there were no labyrinthine complications, hearing would be improved after radical operation. If hearing was only moderately impaired, with no labyrinthine involvement, it would remain the same. If hearing was *very* good, the patient should be told that the operation would probably make the hearing worse. He had not been able to decide upon the two types of cases mentioned by Dr. Duel. He thought every case with chronic middle ear suppuration in danger. It could not be said that one case was in danger and another not. Until one had cleared out the middle ear and tympanic cavity and mastoid, and could see the sinus and middle cranial fossa, one could not say there was no danger. The primary skin graft had been successful in his hands. He had never seen a case in which the skin graft caused trouble unless the sinus or the dura were very badly diseased. He had grafted over these areas repeatedly without trouble. Secondary grafting had not been so successful in his hands. He saw no reason for subjecting a patient to two anesthesias. Two weeks was the shortest time in which he had had dermatization. This was almost the invariable rule in both private and hospital cases, the tympanic cavity, roof of the tympanum, and entire mastoid cavity being absolutely dermatized and dry in ten days or two weeks. He had seen many patients two years after operation and had found the cavity perfectly dry.

Dr. George F. Keiper, Lafayette, Ind., referred to the fact that life insurance companies refuse to accept persons with chronic otitis media, and for that reason he always advised such patients to submit to radical mastoid operation. He thought this advisable, not only for the preservation of life, but in order to enable the individual to occupy a more satisfactory position in life.

Dr. John W. Murphy, Cincinnati, O., knew of no class of cases that placed more responsibility upon the doctor than cases of chronic otitis media, not only with regard to life but also as to hearing. He recalled a case in point, that of a young woman, thirty years of age, who had a deaf mother and sister, and who, in childhood, had had double otitis media. The left ear had ceased to discharge, but had no membrane except a scar tissue. She had applied for treatment for a rather offensive discharge from the right ear. She had no hearing in the left ear and a chronic condition in the right, with gradually decreasing hearing. He could not promise that the end results would be better after operation. She consented to the radical mastoid operation. At the end of two weeks the discharge in that ear stopped, but at the end of two days she developed left-sided paralysis. If that had developed on the right side he would have thought the operation had something to do with it. It was a strange coincidence that a patient should have Bell's palsy on the side of the ear not operated upon, two weeks after the operation.

Dr. James E. Logan, Kansas City, Mo., spoke of cases in which, after thorough operation, with the cleaning out of all necrotic tissue, there were still recurrent attacks. In many such cases he had been able to give permanent relief by cleaning out the vault of the pharynx which may have been the seat of infection from time to time. He believed in many cases of chronic suppurative otitis the vault of the pharynx was the cause of the trouble.

DR. FRANK ALLPORT, Chicago, had been in the habit of estimating his cases, with reference to hearing, in accordance with Dr. Dench's formula. In the large majority of cases the radical mastoid operation gave good results, so far as hearing was concerned. For the last five years he had used gauze only for the first few days, substituting the gauze packing in a week's time with boracic acid powder, filling the cavity almost completely with the boracic acid powder and covering this over with a little gauze. Healing took place more quickly under this form of packing than with anything else. He agreed with Dr. Logan with regard to the part played by the pharynx in the clearing up of these cases. The end-results would be better if all paid better attention to the pharynx, particularly to the clearing out of the fossa of Rosemuller. He did not employ skin grafting in all his cases. Whether one resorted to grafting or not Dr. Dench's results with this mastoid were notable. He had formerly employed the Ballance method, and also Dr. Hammond's method, but latterly, when he used a graft at all, he followed Dr. Dench's plan.

DR. GEORGE F. COTT, Buffalo, N. Y., said one sometimes had the opportunity of making postmortem examinations of cases in which the radical mastoid operation had been performed. He had had 180 radical mastoid operations. One patient had had a discharge for forty years, and she was forty-four years old. He did a radical operation, when he found a hole in the dura one-eighth of an inch in diameter, through which the probe passed one and one-fourth inches. He dropped the probe down easily, slit this open, and did nothing more. The patient did well. At the end of two years she got sick suddenly, and died in two days. Postmortem examination revealed basilar meningitis, with meningococcus infection. In another case, there was acute middle ear suppuration, with intense pain for a week. He operated, the patient did well for two days, then the temperature, apparently normal, went up to 104½ degrees, then down to somewhat below normal. The patient died. The subarachnoid spaces were found, upon postmortem examination, to be entirely filled with blood, in different stages of clotting. In the third case a girl had acute otitis media of six weeks' duration. At operation the entire mastoid bone was found to be sclerosed. She had had pain in her eyes since she was very young. She apparently recovered from the operation. He saw her at intervals for six months. She died suddenly, having considerable pain at the base of the brain. Postmortem examination revealed a cerebellar abscess as large as the little finger. She had not had a symptom other than the pain. Two abscesses were found on the parietal lobe of each side.

DR. THOMAS J. HARRIS, New York City, said it had seemed to the program committee that Dr. Smith's paper was exceedingly timely. Judging from the discussion, it would seem that the paper had given the impression that there was nothing but the favorable to be said concerning the mastoid operation. It was his own observation, in this country and abroad, that this was not the case, that such were not the results that were being obtained. It was for this reason that Dr. Smith had been invited to discuss this subject. One had only to go into a clinic in any large city to see patients treated week after week for chronic suppuration, to see case after case of facial paralysis going in

for dressings. Was it fair to consider this operation from the results of brilliant operators, or should it not be considered from the point of view of the majority of operators? As Dr. Cott had said, there were cases of death. Was death, in these cases, due to the mastoid, or was it coincidental? The mastoid operation was not performed entirely for chronic suppuration; it was performed frequently as the next step in an intracranial operation. He wished that there might at some time be a *referat*, as had been done in Dr. Yankauer's paper, so that the results of those having a small number of cases might be obtained. There was a feeling that the radical mastoid operation was being overdone, that it was done too quickly. Was that the case? After reviewing the statistics, could it be said that the results for the last fifteen years have been good?

Dr. Smith, in closing the discussion, said when skin grafting was first introduced he had used it with not very satisfactory results. He discontinued the method for a number of years, and then, stimulated by Dr. Dench's results, he had taken it up again, but could make no report on the cases so treated because they were too recent. He employed Dr. Dench's method, using one large graft and two smaller ones, all primary grafts. He had had few cases of Bell's palsy, three of which occurred previous to operation. In two cases he was called out of town on the day appointed for the radical mastoid operation, and that night Bell's palsy developed. If he had operated at the appointed time the palsy naturally would have been attributed to the surgical procedure. Deaths following the radical mastoid operation were, in his opinion, due to complications. He had never seen a death occur in an uncomplicated case.

Vertigo of Labyrinthine Origin Following a Chronic Suppuration Otitis Media with Cholesteatoma. 1st—Simple Mastoid with Curettage of the Middle Ear and Eustachian Tube. 2nd—Radical Labyrinth Exenteration. Dr. Francis P. Emerson, Boston.

The otologist is particularly interested in those labyrinth cases which, in their final analysis confirmed by operation, may be readily labelled pathologically, and yet in their clinical manifestations may have presented a reasonable doubt as to the surgeon's attitude in regard to immediate operative interference. The relation of the vestibular apparatus to the brain demands exact diagnosis, and immediate surgical intervention in all pyogenic invasions of the labyrinth if life is to be saved. The case outlined is offered as one with delayed symptoms, and one which was perhaps less clear clinically than many.

The patient, male aged sixty-two years, was admitted to the Massachusetts Charitable Eye and Ear Infirmary, August 11, 1913, with a diagnosis of otitis media suppurative chronica of the right ear. The case is summarized as follows: The patient is a man prematurely old. There is a perforation of the septum. His wife has had two miscarriages. The hearing test for his good ear, that is, the left, the writer has found to be strongly suggestive in other cases of lues, i. e., a low note, but little, if any, raised, a positive Rinne with marked lowering of bone conduction, and the whispered voice reduced to 1-25 or 1-35. In this case there was a negative Wassermann, but no examination was

made of the cerebrospinal fluid. His eyes and a physical examination did not give evidence of specific disease. Could lues then be eliminated as a direct or contributory factor in this patient's symptoms?

The right ear gave a history of discharge for thirty years, and in addition there was a cholesteatome, which as is well known, is quite apt to invade the labyrinth. There were granulations in the posterior quadrant. The hearing test done several times always showed vestibular irritation when the vertical canals were in the plane of rotation. Unfortunately the difference in the after nystagmus between the turning to the right, or to the left was not recorded. The fistula and caloric tests were negative and there was no nystagmus. The hearing test done by two different observers, showed total deafness for the right ear, except a bone conduction of three inches. Can we say that this then was a case of diffuse purulent latent labyrinthitis, and that the apparent vestibular reaction was compensatory? According to Ruttin this does not occur unless a latent purulent labyrinthitis has existed for a long time and has been followed by a complete ossification of the labyrinth or sequestration. In this case there was no clinical history of vertigo until five weeks before admission and our operative findings showed the horizontal canal free, while the superior and posterior contained a greyish-red granular, non-adherent detritus. There was no organized tissue or evidence of ossification present. The second day after operation we have a clear, serous discharge resembling cerebrospinal fluid. There was no facial paralysis and no sequestrum was found. On the other hand, the turning test was always positive.

Have we any evidence to suggest that this was a case of diffuse serous secondary labyrinthitis? The onset of the vertigo favors this supposition, and is confirmed by the hearing test, which shows a remnant of vestibular irritation present. The operative findings are also consistent with this diagnosis; on the other hand, the caloric and fistula tests were negative, and there was no nystagmus at the time the patient was examined. The caloric reaction we know may be lost. If we assume that the portal of entry was originally by way of the oval window, could we not explain the failure at this time to obtain a positive fistular test by the presence of granulations in the posterior quadrant of the middle ear? We recognize that such an invasion is more often followed by a purulent labyrinthitis, but three cases of fifty reported by Ruttin were followed by the serous form. There remains then to be accounted for the absence of nystagmus. This is a symptom of irritation and if, of the second degree, it might readily have been wanting at the time of observation. In the light of our symptomatology and the operative findings, the writer is inclined to consider the case one of a diffuse serous secondary labyrinthitis, as affording the only consistent diagnosis. For those who accept this interpretation, the division into two stages of the operative procedure, is perfectly consistent. If this diagnosis is accepted we must assume that there were no well defined symptoms immediately following the mastoid operation, but that if present at all, they were but little marked, and only developed as a pronounced diffuse serous secondary labyrinthitis on the sixth or seventh day.

(*To be continued.*)

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

December 7, 1915.

DR. GEO. M. COATES, *in the Chair.*

The Successful Intranasal Treatment of Affections More or Less Remote from that Organ. DR. EMIL MAYER, New York City.

(*Published in the present issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. S. S. COHEN, DR. JAMES A. BABBITT, DR. A. H. C. ROWARD complimented the Speaker and stated that their observations bore out the essayist's experiences.

DR. GEO. C. STOUT spoke enthusiastically of the brilliant results frequently obtained in the relief of headache by the treatment of non-suppurative conditions of the nose, such as the removal of causes of pressure in the middle turbinate region and in the region of the genital spot spoken of by the essayist.

DR. ROSS HALL SKILLERN inquired as to the exact location of the points cauterized in the relief of dysmenorrhea.

DR. GEORGE FETTEROLF had more lasting results by the use of the actual cautery in a case of dysmenorrhea where the relief resulting from the use of trichloracetic acid in the nose had not endured; he had also seen cases of vague reflexes caused by spenoid and ethmoid operations.

DR. MACKENZIE discussed the relations of the Vidian nerve in reference to sphenoid sinusitis.

DR. MAYER, closing discussion.

In all the cases cited, competent gynecologists who referred the cases had personally found on examination no local pelvic trouble.

DR. MAYER preferred the use of trichloracetic acid applied very carefully to the so-called genital spots in the nose to the actual cautery—with the electric cautery he feared to add an undesirable nasal condition to the disorder for which the patient was seeking relief. The exact spots to which the applications of trichloracetic acid were applied, first, a spot on the septum directly opposite to the anterior free edge of the middle turbinate, and second, a point on the internal or septal side of the anterior end of the inferior turbinate. If the case is seen during the menstrual period, these places are touched with cocain frequently until the cessation of the menstrual flow, when the applications of trichloracetic acid are given. These are given at intervals of four or five days for four or five applications.

Experience over a considerable period of time has fortified his belief in the procedure in many cases of dysmenorrhea.

After the scientific meeting Dr. Mayer was elected an Honorary Member of the Society.

Dr. Mayer and Dr. S. Solis Cohen were then each presented with Certificates as Honorary Members.